FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

SEPTEMBER, 1955

FIRE CHIEFS' CONFERENCE AND BUYERS' GUIDE ISSUE

Emerson Life-Line

To attach any of the "quick-connect" fittings, push it hard into the receptacle. You will hear a click as it locks into place, and the hose will not pull out.
To release the fittings, rotate the sleeve of the Schrader receptacle, and the hose fitting will come out.
Extension hose plugged into Schrader receptacle.
Fitting of second resuscitator about to be plugged into the "T" at the end of the extension hose.
One resuscitator mechanism already plugged in.
INH
RES
Tank wrench
The flexible connector may be attached to a commercial oxygen tank, such as is used in welding.
Aspirator may be plugged into end of extension hose, if needed.
Turn valve on mechanism to RES for resuscitation or INH for inhalation (as indicated by the arrows).

From free booklet on resuscitation "Know Your Emerson". A special Navy model is shown.

In resuscitation speed saves lives.

Sometimes the person who needs your help is hard to reach . . . down a steep embankment . . . up on a roof . . . trapped under an overturned vehicle. As quickly as you can get to the victim's face with one hand, your **extension hose** can bring him the breath of life.

Sections of the Emerson "life-line" join instantly, as you push the fitting of one into the quick-connect receptacle of the other. You bring the small resuscitator mechanism in your hand and leave the bulky oxygen tanks behind. Hundreds of feet behind, if you choose.

You can do it at very little expense, if you have a dual Emerson. All you need is extension hoses (50 feet for $20) and an extra aspirator ($10) to give your resuscitator this added "fourth dimension" of speed to inaccessible places.

Write us for full details.

J. H. EMERSON COMPANY

77 COTTAGE PARK AVENUE, CAMBRIDGE 40, MASSACHUSETTS, U. S. A.

Whichever way you take it, with two lamps or three, the Beacon Ray still leads in quality and popularity.

Before you decide which type you want, and we offer both types, you should know why

★ THE TWO LAMP MODEL IS BETTER

1. **Gives brighter "flash" effect**
2. **Uses two thirds as much current**
3. **Generates less heat**
4. **Puts less load on motor**
5. **Requires less maintenance**
6. **Weighs less.**

Those who know choose the two lamp model. After long laboratory experiment and test we shelved the three and four lamp models and introduced the Beacon Ray as a two lamp unit because it was superior.

The effect of the moving light is better than a flashing unit because of the relative interval between full beam intensity and the "off beam" darkness. Adding more lamps reduces the "off" interval, reducing contrast and producing an effect more like the less effective flashing light.

Increased current consumption, greater internal heat, and heavier motor load all result in greater wear and increased maintenance. Why pay that premium for less effective performance?

The choice is up to you. We prefer to sell the best, but we have both in production for your selection.

FEDERAL SIGN and SIGNAL Corporation

formerly: Federal Enterprises, Inc.

8702 S. State St., Chicago 19, Ill.

A Consolidation of FIRE AND WATER ENGINEERING, THE FIRE ENGINEER, FIRE PROTECTION *and* FIRE SERVICE

FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

I. HERBERT CASE, General Manager FRED SHEPPERD, Editor KARL M. MANN, Advertising Director

ROI B. WOOLLEY, Assistant Editor
D. FERGUSON, Editorial Assistant

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MEMBER AUDITED PAID CIRCULATION ABC Audit Bureau of Circulations

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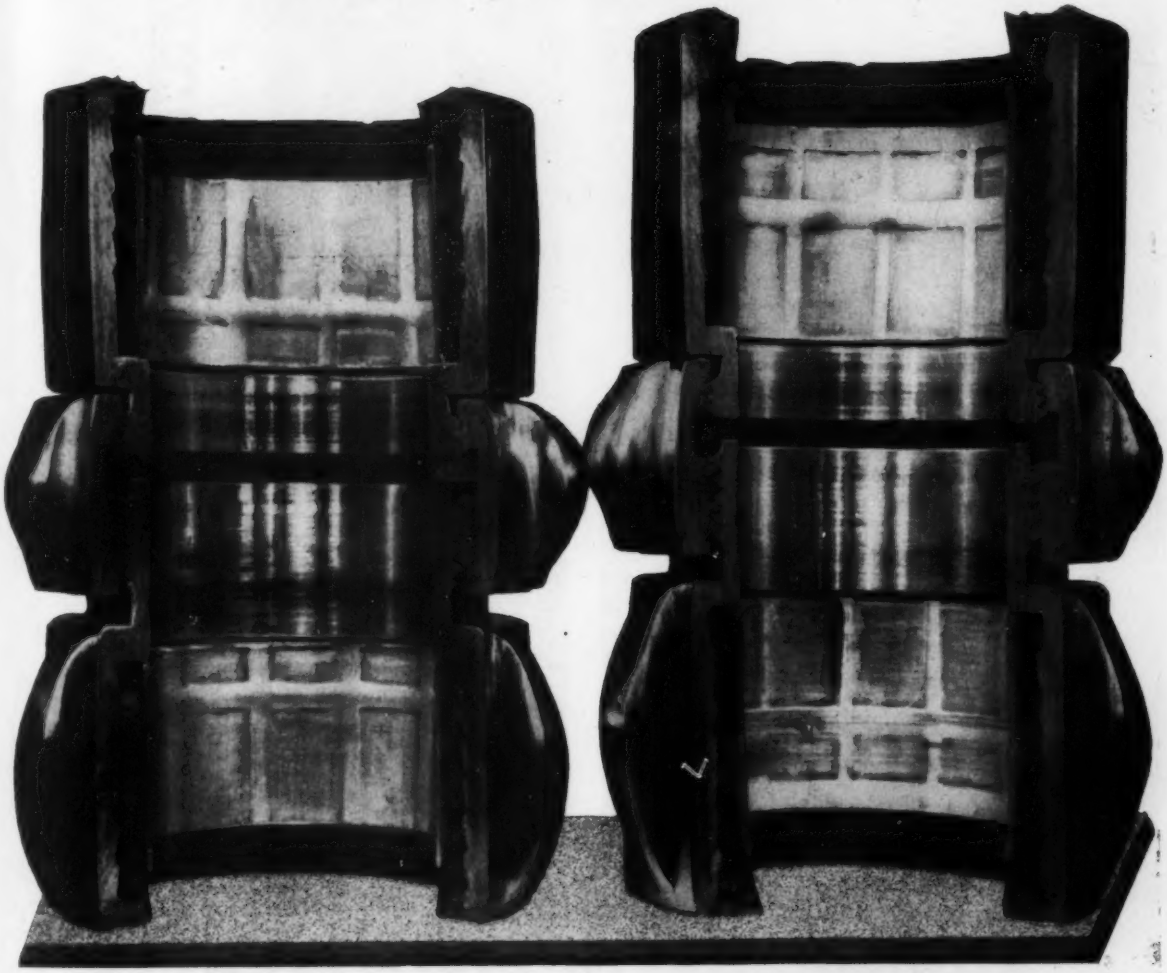
FABRILON

WITH MG COUPLINGS



REGULAR HI-PRESSURE

LIGHTWEIGHT–TAPERED THROAT–HI-YIELD BOWL

HI-PRESSURE RING —— FABRIC 3-LUG PATTERN

FABRIC FIRE HOSE COMPANY

THE ONLY EXCLUSIVE MANUFACTURER OF FIRE HOSE IN AMERICA

SANDY HOOK CONNECTICUT

IN CANADA BICKLE-SEAGRAVE, LTD. WOODSTOCK, ONTARIO

Fight Grass Fires *ON THE RUN* with a BARTON-AMERICAN TYPE UA FIRE PUMP

It's front-mounted, gear driven, centrifugal!

Now's the time you want to kill grass and brush fires *fast,* with no waste time or motion. And you *can* with the BARTON-AMERICAN Type UA Front-Mounted Pump, because you fight grass fires *on the move* . . . with *real power* and full mobility!

For fog guns and straight streams, it'll deliver pressures up to 400 pounds. Because the UA *is* front mounted, you can *drive right up* to ponds or streams for *fast* water supply. And you can carry as much as *600 pounds more water* or extra equipment on the truck than with midship pumps of the same capacity.

Today, get all the details on the great fire-fighting power and practical economy of the BARTON-AMERICAN UA Front-Mounted Fire Pump.

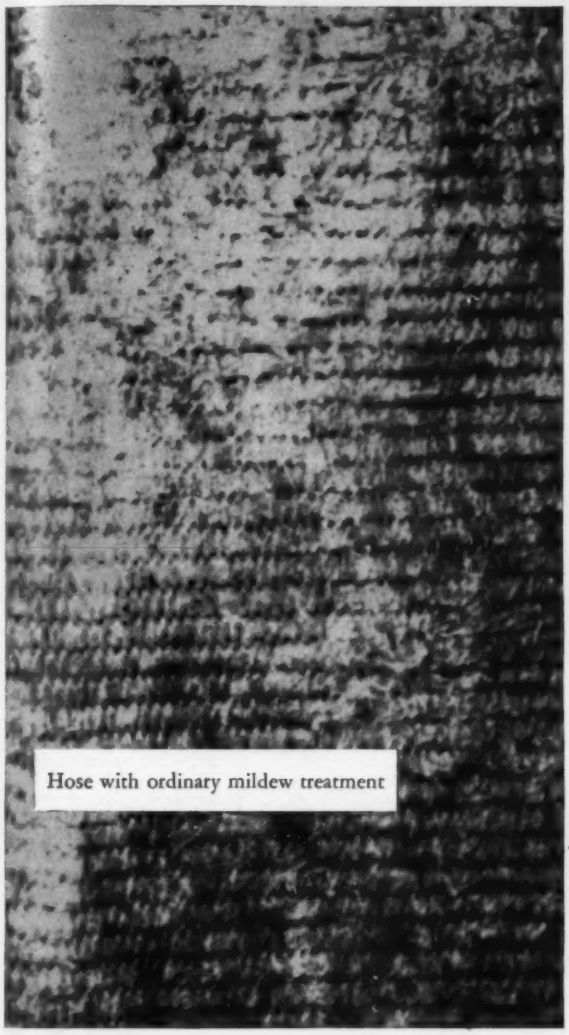
Write for your copy of UA Pump Bulletin 8330-B!

AMERICAN-MARSH PUMPS

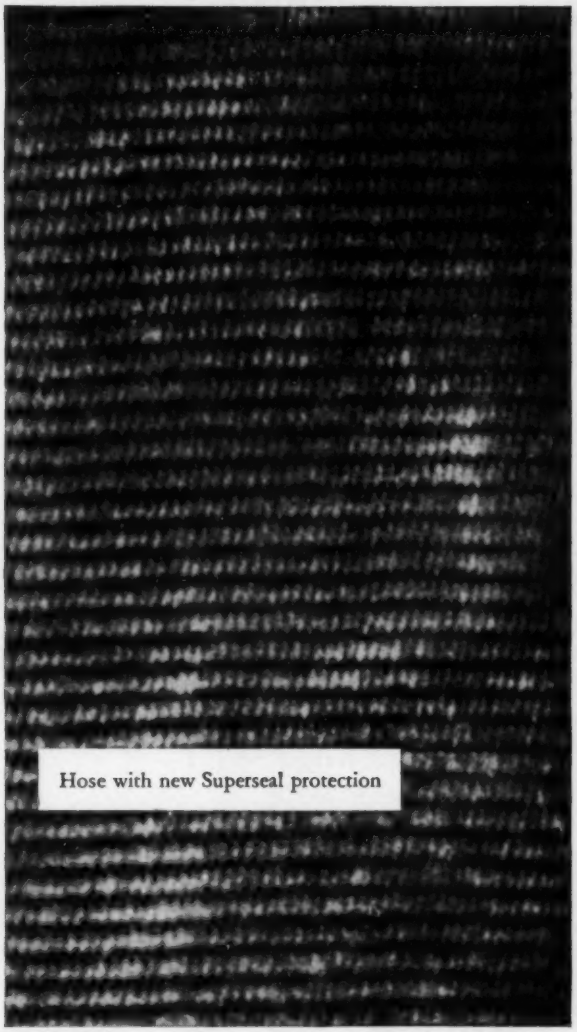
BATTLE CREEK MICHIGAN

In Canada:
American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

B. F. Goodrich announces



Hose with ordinary mildew treatment



Hose with new Superseal protection

New treatment makes hose 10 times more resistant to mildew attack

HERE'S proof that the new Superseal fire hose treatment, recently announced by B. F. Goodrich, resists moisture absorption and mildew attack 10 times more effectively than any other treatment.

Three lengths of hose were buried in a plot of ground that had been infested with mildew spores, maggots and microbes. After 8 weeks, the untreated hose (not shown here) was reduced to powder. The hose treated the old way (at left, above) wasn't much better—couldn't hold water. But the hose on the right, with B. F. Goodrich Superseal protection, looked good as new, still had 96% of its original strength.

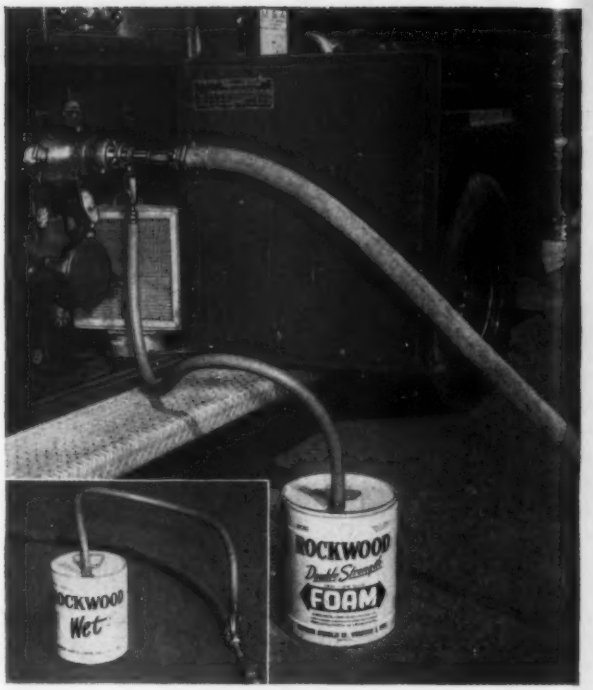
This new B. F. Goodrich treatment is not just a surface application. The chemical solution penetrates and protects every cord in both the inner and outer jackets, prepares the hose for all sorts of weather. And, unlike ordinary treatments, the B. F. Goodrich process actually *increases* the adhesion between jacket and tube. And, in addition, it gives extra safety because the chemical makes B. F. Goodrich hose more flame-resistant.

Next time you need fire hose, order B. F. Goodrich and specify Superseal. It costs no more than ordinary treatments, but gives you maximum protection against mildew attack, rotting and freezing.

There's a B. F. Goodrich fire hose distributor near you, ready to bring this and other B. F. Goodrich hose improvements to your department. Give him a call or write *The B. F. Goodrich Company, Dept. M-478, Akron 18, Ohio.*

B.F.Goodrich
INDUSTRIAL PRODUCTS DIVISION

ROCKWOOD
built-in proportioning systems for municipal fire trucks



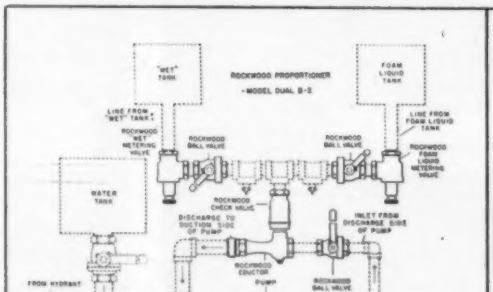
Rockwood's long, practical experience and constant research assures you the safest, most economical means of fighting all types of fires. These pages illustrate a few of Rockwood's family of products that are playing a vital part in fire fighting programs throughout America.

Rockwood's new Double Strength FOAM and Rockwood WET offer you many advantages

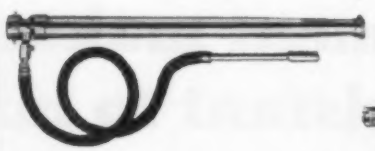
Double Strength FOAM has double foam-making capacity, cutting in half the transportation cost and storage space. It is faster spreading and flows freely — even at subzero temperatures. An outstanding FOAM liquid to go with Rockwood's advanced type of FogFOAM and FOAM Nozzle for quickly putting out fires in gasoline and other similar flammable liquids. Available in 5 gallon cans or 50 gallon drums.

Rockwood WET increases the spread and penetration of water into deep seated fires involving ordinary combustibles such as wood, paper, cloth, etc. It greatly reduces the water needed to extinguish such fires. Available in 50 gallon drums, 5 gallon and 1 gallon cans.

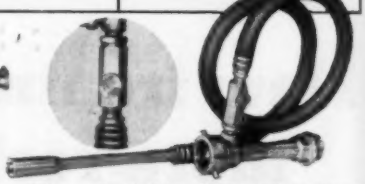
Regular FOAM and All Purpose FOAM are also available.



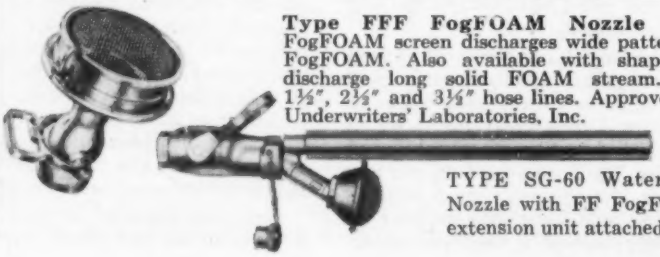
Proportioning System. Model B-2, around-the-pump proportioner. Used when pressure is maintained by pump. Custom-engineered systems are also available.



The F-501 Nozzle developed for use with 1½" hose to provide an economical means of applying a solid stream of FOAM on flammable liquid fires.



The Variable FW Metering-Check Valve with FW Eductor incorporates both the Metering Valve and Ball Check Valve in one unit and meters material into the hose line in any proportion from 1% through 6%.



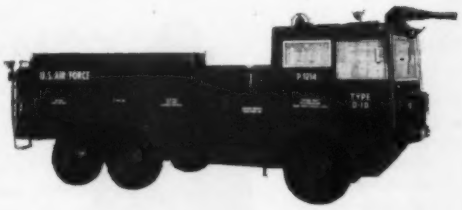
Type FFF FogFOAM Nozzle with FogFOAM screen discharges wide pattern of FogFOAM. Also available with shaper to discharge long solid FOAM stream. For 1½", 2½" and 3½" hose lines. Approved by Underwriters' Laboratories, Inc.

TYPE SG-60 WaterFOG Nozzle with FF FogFOAM extension unit attached

Rockwood offers you 4 types of turret control

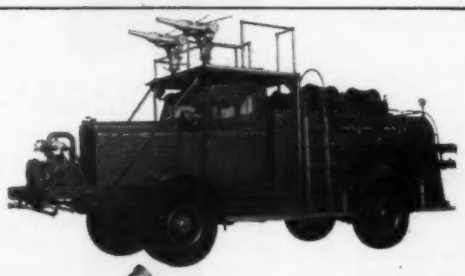
...and any Rockwood turret gives you 4 types of discharge (1) FogFOAM, (2) Solid FOAM stream, (3) WaterFOG,(4) Solid water stream

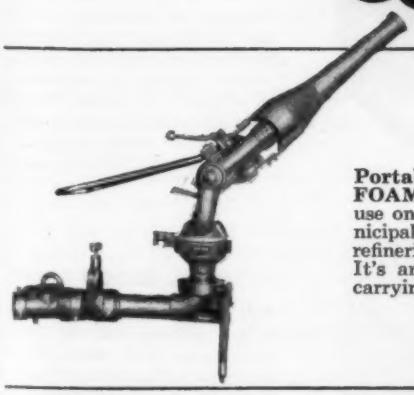
Remote Hydraulic Control Single Type FFF FogFOAM Turret Nozzle on Type 0-10 U. S. Air Force crash rescue fire fighting truck. Similar turrets can be supplied for oil refineries, chemical and industrial plants and municipalities. Hydraulically operated dual turrets also available.



Remote Manual Control Type FFF FogFOAM Turret Nozzle provides efficient operation of turret from driver's seat within truck cab — for small municipalities, airports or industrial properties where limited personnel is available.

Direct Manual Control Dual Type FFF FogFOAM Turret Nozzles — can be operated directly by firemen from cab roof.



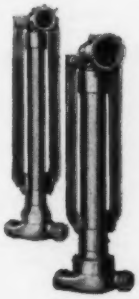


Portable Type FFF FogFOAM Turret Nozzle for use on fire hose lines by municipal fire departments, oil refineries and industrial plants. It's arranged for convenient carrying on fire trucks.

ROCKWOOD

WaterFOG Equipment

Type SG-48 WaterFOG Nozzle. Easy to handle. Discharges high or low velocity WaterFOG or straight water stream.



Lightweight Rotating Cellar and Attic Pipe. Fights fires in cellars, attics, under piers, bridges, etc.

Type N22 WaterFOG Nozzle. Discharges high velocity WaterFOG. For general use around live electrical equipment.

Type N23 WaterFOG Nozzle with Swivel Handles. Discharges high velocity WaterFOG with higher discharge and greater range than Type N22 Nozzle.

ROCKWOOD SPRINKLER COMPANY

Engineers Water . . . to Cut Fire Losses

PORTABLE FIRE PROTECTION DIVISION

1024 Harlow Street, Worcester 5, Massachusetts

Distributors in all principal cities

Increase your fire-fighting efficiency and safety with prov

M.S.A. MASKFONE

Self-contained communication system between two mask wearers or a wearer and a remote control point. No batteries or external power needed. Clear, crisp voice communication aids fire-fighting efforts by permitting instant relay of instructions, warnings. Write for details.

M.S.A. "ALL-SERVICE" MASK®

For fire-fighting efforts in air contaminated with smoke and gas, but where sufficient oxygen is present to support life, the "All-Service" Mask assures dependable breathing protection to the wearer. Available with the M.S.A. "Cleartone" Speaking Diaphragm for clear speech transmittal. Write for details.

M.S.A. PNEOLATOR

Assures maximum chances of recovery in all cases of arrested breathing. Provides oxygen at the preselected amount and pressure. There is no suction cycle—exhalation takes place by the normal passive return of respiratory muscles. Portable, rugged carrying case. Write for complete details.

M.S.A. STREAMLINED FIREMAN'S HELMET

Meets all requirements for fire-fighting hats—molded laminated plastic takes bumps and blows, withstands water, oil, heat, provides high dielectric strength. Streamlined design adds eye-appeal; shields are of tough, full-grained leather; winter lining zips in quickly. Write for details.

M.S.A. FOILLE BURN KIT

This kit is supplied with four aerosol sprays for quick, effective application to burned areas to ease pain and aid in the control of shock. Aerosol application is fast, effective, always ready. Kit also contains a complete assortment of first aid dressings and accessories. All units are assembled in a weather-proof steel case. Write for details.

M.S.A. FIRST AID KIT

Designed to meet all the requirements of fire department service. Contents of the M.S.A. Kit are individually wrapped in cellophane to protect against dirt, dust and moisture. All-weather steel case design provides an added safeguard. A complete supply of emergency treatment for immediate application is contained in unit packages for quick location, individual treatment. Write for details.

M.S.A. EXPLOSIMETER®

A compact, portable, easy-to-use instrument for checking suspected areas for explosive gases and vapors during fires and in general survey work. Body carrying straps, and one hand operation permit unhampered use. Easily read dial, rugged, simple to maintain. Write for details.

M.S.A. FLOOD LAMP

Safe in gaseous atmospheres, this lamp combines brilliant, unfailing illumination with easy portability. Equipped with standard Edison Batteries in magnetically-locked steel container. Lamp housing is water and dustproof. Write for details.

Call the M.S.A. man

on your safety problem

... his job is to help you

MSA

SAFETY EQUIPMENT HEADQUARTERS

th proved M·S·A equipment

M·S·A CHEMOX®

This unit provides complete breathing protection for firefighters in oxygen-deficient or unbreathable atmospheres. Pure oxygen, released from the replaceable chemical canister the instant the wearer breathes, continues automatically in accordance with the breathing demands. This protection is provided for a minimum of 45 minutes under rugged working conditions.

The Chemox is light—only 13½ pounds. It is comfortable, designed for freedom of movement. The canisters can be stored indefinitely—are always ready. M. S. A. "Cleartone" Speaking Diaphragm, which permits clear communication between mask wearers, is standard equipment. Write for details.

M·S·A AIR-MASK

... *available with AIR or OXYGEN*

This unit, designed to bring respiratory protection and comfort to users in unbreathable atmospheres, supplies air or oxygen in exact accordance with breathing needs. During exhalation, the flow ceases—an economy measure that greatly lengthens service life.

Here are a few of the construction details—

- ... large, well-defined figures on pressure gauge for easy reading.
- ... the high pressure hose is made of wire-inserted neoprene for increased wear.
- ... the redesigned cylinder valve connects directly to the cylinder and the improved working parts of the valve provide greater serviceability and less maintenance.
- ... the nylon harness is easily adjusted and provides maximum strength. It is highly chemical and water-resistant.
- ... the new color scheme is an attractive dark green and yellow. This striking appearance makes it easier to spot men in working areas. Write for details.

MINE SAFETY APPLIANCES COMPANY
201 North Braddock Avenue, Pittsburgh 8, Pa.
At Your Service: 76 Branch Offices in the United States

MINE SAFETY APPLIANCES CO. OF CANADA, LTD.
Toronto, Montreal, Calgary, Edmonton, Winnipeg, Vancouver, Sydney, N.S.
Representatives in Principal Cities in Mexico, Central and South America
Cable Address: "MINSAF" Pittsburgh

Beautiful!

...and packed with practical, original *American* features that increase your fire-fighting effectiveness!

At American, you can select from a wide range of standard or custom-built models tailored to suit the needs of your community. Select the make of chassis you prefer and the body design you like best. Choose the Barton-American Pump you wish from a wide range of Midship models —two-stage, four-stage or the *new* single-stage types—or Front-Mounted Pumps with the *only* positive, inter-locking clutch that can't slip and leave you helpless at a fire.

If you're looking for superior performance, look at American's superior features!

See this engine—and all these features —at the Convention!

Contact your nearest American Representative soon!

American

AMERICAN FIRE APPARATUS CO.

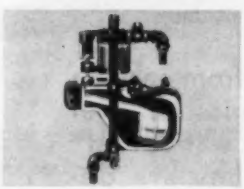
FIRE APPARATUS CO.

Main Office: Main Street Road, Battle Creek, Mich. • Plants at: BATTLE CREEK, MICH. • MARSHALLTOWN, IA.

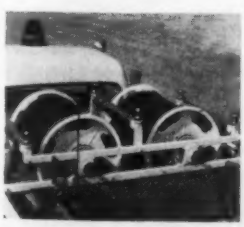
BARTON SUPER-FOG GUN—Famous for both long-range and close-up fog. Effective with normal and/or high-pressure, small or large volume straight streams or fog. Now with new refinements!

FROST-PROOF TANK OUTLET—Valve location in wide sump basin prevents possibility of freezing. Strainer baffles prevent swirl—insure fast, steady water flow. Entire valve unit easily removable for repair or tank clean-out.

NEW ENGINE GOVERNOR—An entirely new, superior Barton-American engineered design. It combines pressure regulation and engine speed control . . . instantly idles engine whenever pump for *any reason* loses its pressure.

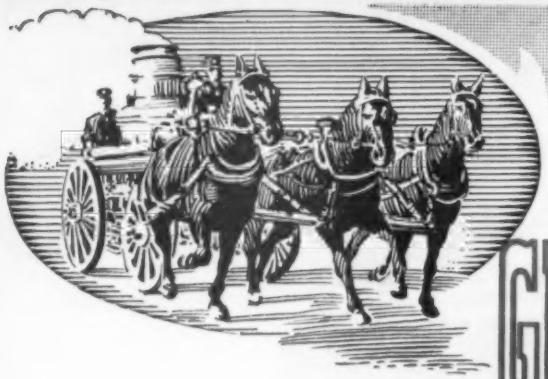


FAST VACUUM PRIMER—Motor vacuum priming—now improved for 100% faster operation. Trouble-free—no lubrication or adjustments needed for life of unit. Furnished as part of dual priming when required.



IMPROVED ELECTRIC REWINDS—Pioneered by American . . . now with new features. Single starting motor. Convenient, quickly adjusted brake control. Superior reel design permits hose expansion under pressure, protects hose at couplings. No elbows—reduces friction.

You benefit from the finest of plant and testing facilities.



LEADERS FOR OVER HALF A CENTURY . . .
SUITS FOR FIRE CHIEFS AND FIREMEN

GLOBE

Since 1901

Proven in use throughout the world for the last five decades, the Globe Suit is your standard for maximum protection, and really needs no introduction at all. Every garment is absolutely guaranteed to give years of dependable service. This guarantee we make unconditionally because we know that Globe Suits have proven outstanding when put to every test.

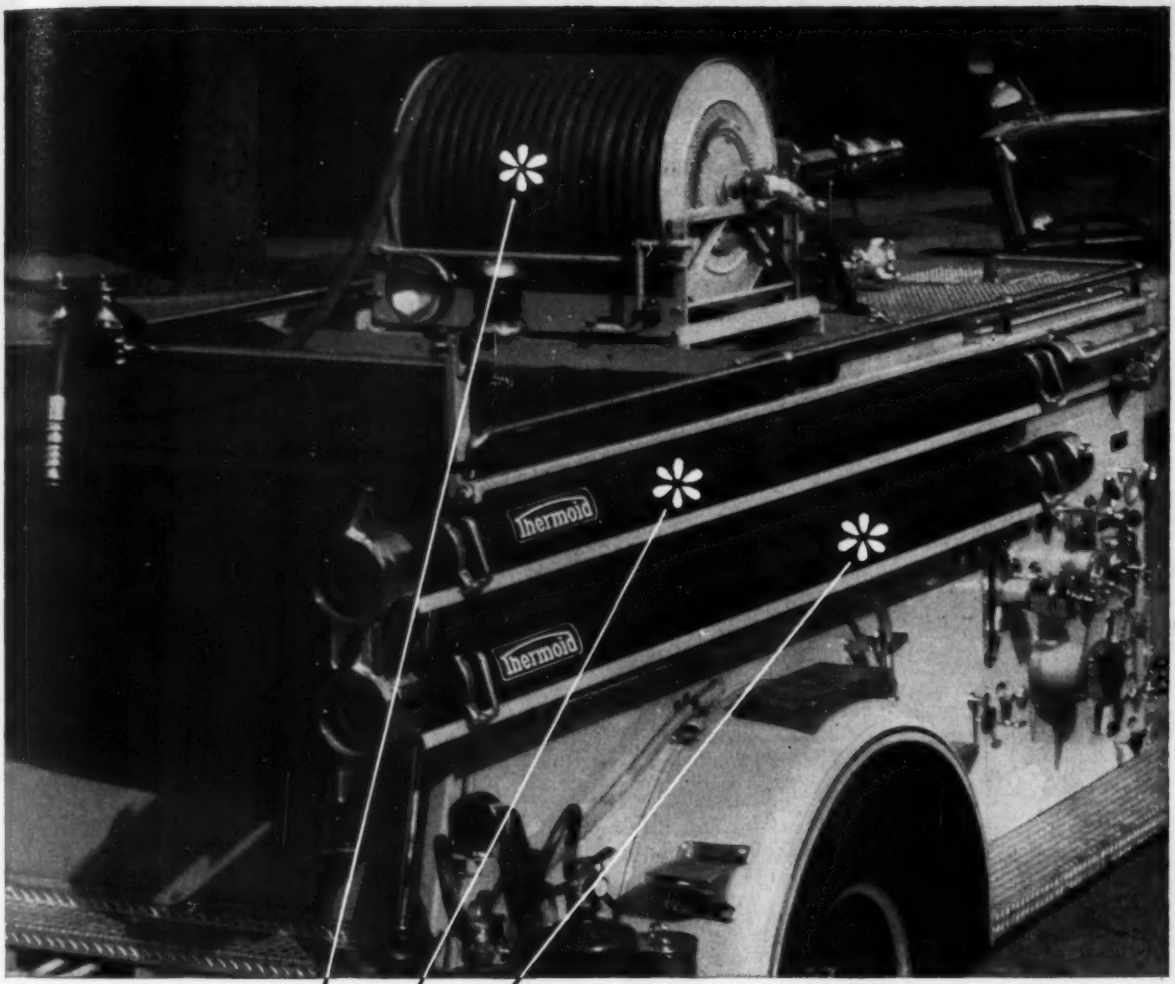
Globe Suits are made from only the toughest, stoutest fabrics . . . yet they are light, flexible, waterproof* and comfortable. They are designed and constructed for your safety in action.

*Interlinings made with 100% Du-Pont Neoprene.

See them at your dealer's or write for our catalog.

STANDARD SINCE 1901

GLOBE MANUFACTURING COMPANY PITTSFIELD, NEW HAMPSHIRE



Be sure the hose is Thermoid!

No matter how well a modern pumper is built, its effectiveness is entirely dependent on the hose that takes in and delivers water. Quality, a basic specification of all equipment builders, is engineered into every length of Thermoid Hose.

Thermoid Fire Engine Suction Hose

A smooth bore, flexible, fabric wrapped hose, reinforced with steel wire, imbedded in a heavy reinforcement carcass. Thermoid Hose is manufactured to exacting specifications to assure perfect coupling fit.

Thermoid Red Devil Booster Hose

A lightweight hose with design that limits contraction under pressure, insuring safe reel operation. Durable 3 braid reinforcement covered with special compounded cover that resists oil, grease, abrasion. Working pressures to 800 psi.

Get the facts now. Contact your Thermoid Distributor or write direct to factory.

Thermoid

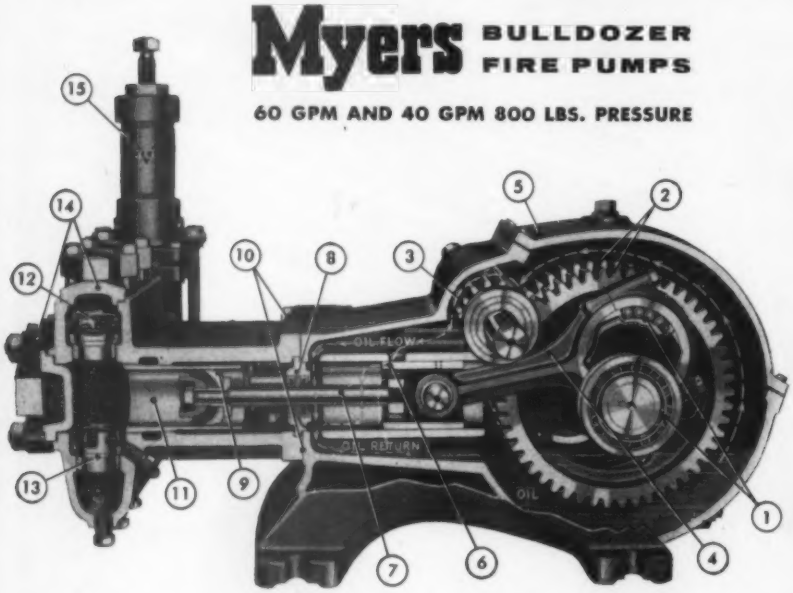
Thermoid Company, Trenton, N. J.

Wrapped and Molded Hose • Belting • Brake Linings • Friction Materials • Precision Process Molded Products

Built by Myers for PRESSURE!

Myers BULLDOZER FIRE PUMPS

60 GPM AND 40 GPM 800 LBS. PRESSURE



See Numbered Cutaway Drawing

Manufacturers of fire-fighting equipment—and fire chiefs alike—specify Myers Giant Bulldozer fire pumps to deliver the dependable pressure required for vital high-velocity stream or cooling fog. Built by Myers and backed by nearly 80 years of pump engineering know-how, the Giant Bulldozer is designed to withstand the severe strain and hard service required of pumps operated under high pressures. Check these quality features one by one:

1. ROLLER BEARINGS—Throughout with hardened-steel wearing surfaces.

2. LARGE DOUBLE MAIN GEARS—Eliminate side thrust, strains, stresses and breakage. Friction, wear and loss of power are reduced to a minimum. Quiet, smooth, efficient and economical operation.

3. PINIONS—Flame-hardened steel, cut integral with the Shaft—no keys to wear or loosen.

4. CONNECTING LINKS—Extra long, move directly in line with the cylinders. Have oversize wrist pins with removable bronze bushings. Large roller bearings reduce friction and power loss to a minimum.

5. GEAR CASE—Dust, dirt and drip proof. Working parts removable without draining oil.

6. CROSSHEADS—Large diameter and extra long. Keep plungers centered in cylinders—cups wear evenly, last longer.

7. PISTON RODS—Stainless steel, accurately centered and securely fastened into crossheads.

8. WATER AND OIL SEALS—To prevent water from entering and oil from leaving gear or oil chamber.

9. PLUNGERS—Rubber and fabric cups—easily replaced at low cost.

10. WATER END—Flanged and bolted to gear case—no long bolts to stretch and loosen.

11. CYLINDERS—Heavy-steel shell with smooth, wear-resisting, non-corroding, porcelain lining. Patented. Tapered fit—no packing required. Easily removed and replaced.

12. FLAT VALVES—Patented. Spring loaded, disc type. Stainless steel disc, seat and spring. Fast and positive seating.

13. VALVE SEATS—Hardened stainless steel, tapered, no gaskets—less corrosion, less wear, more efficient.

14. VALVE AND CYLINDER CAPS—Have recessed gaskets and are held by bolted clamps. Can be quickly and easily removed.

15. PRESSURE REGULATOR—Diaphragm type. Fast, positive Flat Disc Valve.

CRANKSHAFT—Forged Steel Precision machined for extremely accurate tolerances. Heat treated and carefully balanced.

FREE

For complete details write for a free catalog section covering the full line of Myers fire pumps, high-pressure guns and fog nozzles. Send coupon to: The F. E. Myers & Bro. Co., Dept. FF-9, Ashland, Ohio.

Name_____

Street_____

City_____

State_____

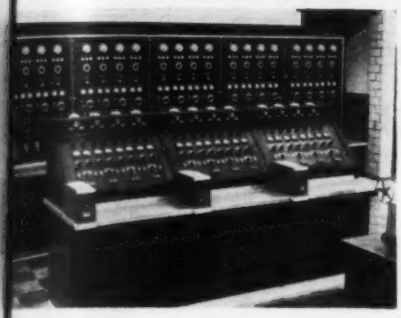
Myers PUMPS

WATER SYSTEMS AND WATER SOFTENERS

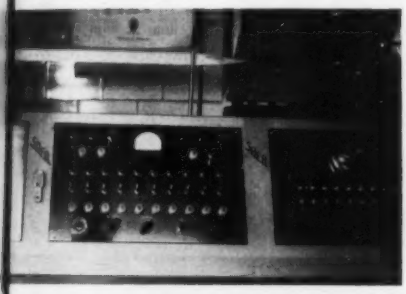
THE F. E. MYERS & BRO. CO. • Dept. FF-9, Ashland, Ohio

SEE THEM IN OMAHA - - - -

SEE THEM IN ROCHESTER



STYLE, SHAPE AND FINISH OF SAFA'S EQUIPMENT MATCH PERFECTLY, TO SUPPLEMENT EXISTING SYSTEM AT CINCINNATI, OHIO.



STATIC-FREE, SUPERB TONE QUALITIES UNEQUALED ON ANY SIMILAR SYSTEM, ARE WANTED FEATURES OF SAFA'S NEW INTERCOM.

SANDUSKY, OHIO, CHOSE SAFA CENTRAL-STATION EQUIPMENT FOR ITS OUTSTANDING FLEXIBILITY IN HANDLING A WIDE RANGE OF AUXILIARY NEEDS.

SAFA'S MODERN CENTRAL-STATION CONTROL PANELS CONTAIN EVERY SAFEGUARD KNOWN TO INSURE FULL-TIME READINESS FOR SPLIT-SECOND ACTION. THIS CUSTOM-BUILT CONTROL PANEL IS IN OPERATION AT LAFAYETTE, INDIANA.

You won't want to miss the two big events of 1955:

THE I.A.F.C. CONVENTION IN OMAHA, SEPT. 19-22

THE I.M.S.A. CONVENTION IN ROCHESTER, SEPT. 26-29

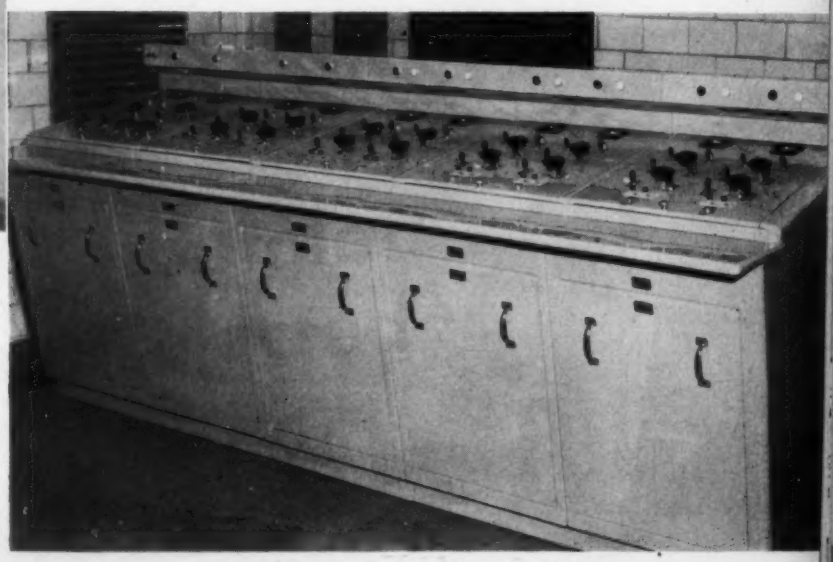
SAFA has prepared one of the most interesting displays of custom-built signal system equipment ever devised to add to your enjoyment of these significant meetings.

YOU WILL WANT TO EXAMINE AND OPERATE

- The new 10-Circuit Compositrol, Form 4
- The new 10-Station Master Intercom
- The new Register and Take-Up Reel
- The new Bench-Type Control Panel
- The new 8-Circuit Box Recorder
- The new 4-Digit Transmitter

Visit our display at each of these Conventions. Bring your questions with you. Let us discuss them and demonstrate the superior qualities of these newest Central-Station control units.

SAFA invites requests for detailed studies and recommendations. Send today for information. There is no obligation. Put Safa's planning and engineering skills to work for you, to bring your present system to a new high standard of effectiveness.



SAFA ALARM DIVISION *The Fyr-Fyter Co.* **ORRVILLE, OHIO**

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All Over
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Gentlemen:

For almost three generations, discriminating buyers have bought MAXIM Fire Apparatus. They have selected this equipment not because they always got the lowest initial price but because they realized that MAXIM products have two priceless ingredients -

1. Uncompromising Craftsmanship
2. Unexcelled Service Life

It is our policy to continue to merit the confidence, which hundreds of buyers have placed in MAXIM, by building apparatus that will do an outstanding job for your department at a minimum of service cost.

We believe that this policy of uncompromising quality and craftsmanship will continue to appeal to the discriminating buyer and the hard headed, farseeing purchasing executive.

Cordially yours,

MAXIM MOTOR COMPANY

Ernest L. Maxim
President

long...long after
the purchase price
has been forgotten–
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you'll be glad
you selected–
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VISIBILITY U

with the incomparable *New*

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FACE MASK

INDUSTRIAL

The Industrial Safety Director says, "Now my men can see where they're going. They've got FISH-BOWL VISIBILITY, and the comfort is amazing, even over glasses."

AVIATION

The Airline Captain says, "These new 'Scott'oramic Face Masks give me Helicopter Visibility . . . provide that side vision so vital in the last few seconds of a landing."

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The Fire Captain says, "Here's a new kind of face mask. One look through it tells the story of amazing visibility. No more peephole "tunnel vision."

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"SCOTTORAMIC"
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The LITTLE MO

America's Most Practical Fire Fighter

With

A New Method of Fire Fighting

One Man Can Fight More Fire With Little Mo

Little Mo Can Be Used on Class A B C Fires

New Haven Selects "LITTLE MO"

LITTLE MO EQUIPMENT

Chevrolet chassis with dual wheels, combination high-pressure volume 4 stage centrifugal pump with electric primer. 200 gallon booster tank with Rockwood dual suction proportioning system for "FOAM" and "WET", remotely controlled. Rockwood "cab controlled" ground sweep bumper nozzles for FOG FOAM or FOG. Rockwood remote manually controlled turret for FOAM, FOG FOAM or FOG, mounted on cab and controlled from within. Two Hannay high pressure booster reels with 200 feet Fabric high pressure booster hose and a Rockwood Fog & Straight Stream AirForce nozzle on each line. Applicator for discharging foam or fog foam thru AirForce nozzles. 1½" ball type valve for discharging water thru 2—1½" lines, 2½" gated rear suction with booster tank fill line. All gauges and tachometer located on instrument panel in cab. Quick fillers for foam, wet water and water. Sterling #20 sirenlight, spotlights, rear pick up lights, axe, bar, 12′ ladder.

3 Models To Suit Your Needs

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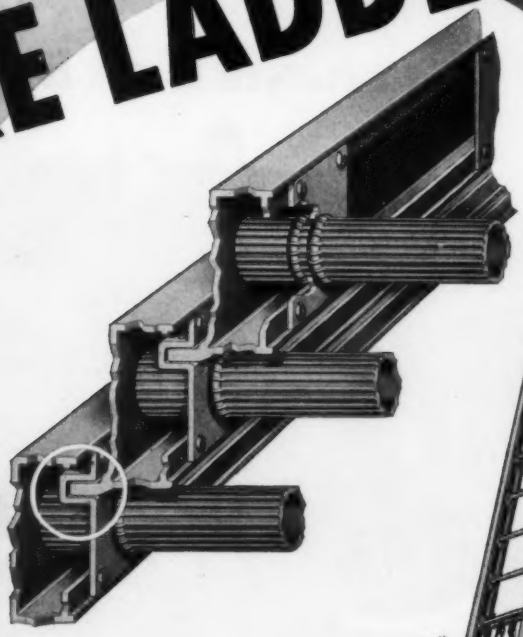
"LITTLE MO" — Every Fire Department Should Have One — "LITTLE MO"

THE SPOTLIGHT IS ON THIS NEW

DUO Safety FIRE LADDER

SERIES 900-A

WITH EXCLUSIVE TONGUE AND GROOVE CONSTRUCTION



A BRAND NEW DESIGN IN THE FAMOUS DUO-SAFETY LINE

. . . and featured in the fire ladder spotlight is this new, outstanding development in aluminum ladder construction. It's Duo Safety's latest addition — the 900-A Series Fire Ladder which combines the strength and safety of Channel Rail construction with an exclusive tongue and groove design that firmly and securely locks the sections together without hooks or brackets. This outstanding structural arrangement prevents jack-knifing of the ladder — and — eliminates the possibility of finger-pinching! Series 900-A will add safety and dependability to your use of fire ladders — Write today for catalog page on this fine new ladder and others in the complete Duo-Safety line.

DUO-SAFETY LADDER CORPORATION

809 Ninth Street • Oshkosh, Wisconsin

from coast to coast . . .

MACK B Model

. . . the best built . . .

Princeton Junction, New Jersey—Mack Type B-505 six wheeler. 500 gpm triple combination pumper. 1500 gal. booster tank. 3-man coupe cab.

Mack Type B-85, 750 gpm triple combination pumper. 5-man sedan cab.

Mack Type B-85, 75' four-wheel aerial. Fully compartmented.

Mack Type B-85 tractor drawn 85' aerial with compact design for easy handling in heavy traffic.

MACK MANUFACTURING CORPORATION

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Fire Apparatus

the best performers

Arcade Fire District, Sacramento, California—Mack Type B-95, 1000 gpm triple combination pumper. 4-stage high-pressure pump. 500 gal. booster tank, special side-mounted reels in compartments.

THROUGHOUT THE NATION, fire departments now have the new B Model Mack Fire Apparatus in service. The word's getting around fast—these are the greatest Macks ever built!

MOST MODERN IN THE FIELD, B Model Macks incorporate all the experience gained in nearly 50 years of leadership in equipping the fire-fighting services.

FAMOUS FOR DEPENDABILITY, their Mack-built chassis have been completely redesigned for even greater strength . . . for stand-out performance and safest handling qualities.

HANDSOMELY STYLED, the new B Model lines are completely functional—providing unmatched visibility, personnel protection, and ease of maintenance—with no departure from familiar, conventional design.

PACKED WITH POWER, their king-sized, overhead-valve Mack Thermodyne® engines provide more *useful* fire-fighting power . . . performance-*plus* that you can always count on.

AND STILL OUTSTANDING FOR QUALITY! Mack maintains highest quality control by designing and making many more components than any other fire apparatus manufacturer.

WHATEVER YOUR NEEDS . . . six or four wheel aerials, pumpers, squad cars or combination ladder trucks—you'll find a Mack can best fill the bill. Be sure to call in your Mack representative for full details.

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Mack
FIRE APPARATUS

3276

ELECTRIC POWER

DELCO-REMY A.C. GENERATORS FOR EXTRA-HEAVY ELECTRICAL LOADS

Delco-Remy's new 6- and 12-volt A.C.-D.C. charging systems are the answer to the *extra-heavy* electrical demands of late-model fire engines, and other vehicles equipped with two-way radio, floodlights, or other special electrical units. High wattage output is ample for heaviest electrical loads . . . generators pick up discharged batteries quickly in emergencies. Delco-Remy A.C.-D.C. charging systems are unexcelled at curb-idle . . . furnish up to 180 amperes at higher engine speeds . . . are dependable under the most rugged operating conditions at all engine speeds.

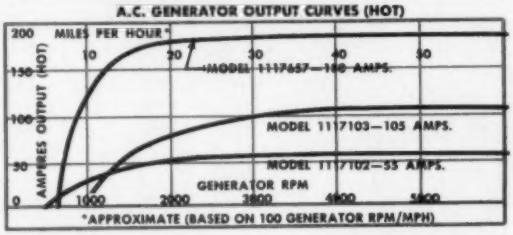
Application packages for both 6- and 12-volt generators, complete with installation instruction sheets for popular makes of cars and trucks, are available. Conversion is simple. Specify Delco-Remy A.C.-D.C. systems on your new apparatus. See your nearest United Motors Distributor for generator applications on existing vehicles.

A.C. GENERATOR PERFORMANCE DATA (HOT)

Model	Volts	Cut-In RPM	Engine Idle Amperes*	Maximum Amperes	Power Watts SAE	Recommended For
1117102	12	525	39	55	825	All speeds.
1117103	12	960	5	105	1575	All speeds.
1117657	12	550	130	180	2700	All speeds.
1117062-3-4	6	750	38	90	720	All speeds.

*APPROXIMATE (BASED ON 1000 GENERATOR RPM)

A.C. GENERATOR OUTPUT CURVES (HOT)



*APPROXIMATE (BASED ON 100 GENERATOR RPM/MPH)

DELCO-REMY D.C. GENERATORS FOR MEDIUM-TO-HEAVY ELECTRICAL LOADS

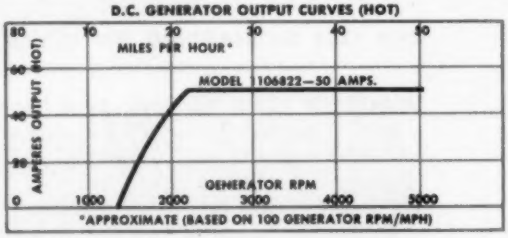
Delco-Remy's 12-volt extra-output D.C. generator is an economical answer to the electrical needs of late-model fire engines . . . other vehicles with additional lights, two-way radios, or other special electrical equipment in medium- to heavy-duty service in suburban areas. Delco-Remy extra-output D.C. generators are low in cost, simple to install, economical to maintain. Performance data on a typical Delco-Remy 12-volt D.C. generator are shown at the right. Specify Delco-Remy extra-output generators on your new apparatus. For further details and generator application data on existing vehicles, see your nearest United Motors Distributor.

D.C. GENERATOR PERFORMANCE DATA (HOT)

Model	Volts	Cut-In RPM	Curb Idle Amperes*	Maximum Amperes	Power Watts SAE	Recommended For
1106822	12	1300	0	50	750	Low to Medium Speeds

*APPROXIMATE (BASED ON 1000 GENERATOR RPM)

D.C. GENERATOR OUTPUT CURVES (HOT)



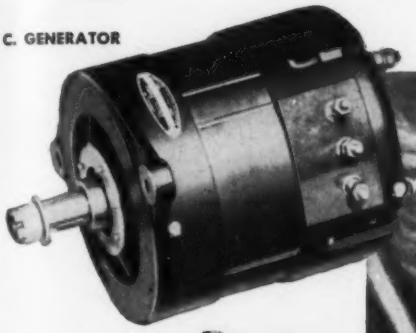
*APPROXIMATE (BASED ON 100 GENERATOR RPM/MPH)

Delco-Remy
ELECTRICAL SYSTEMS

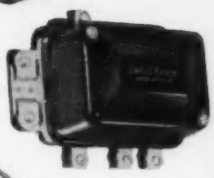
DELCO-REMY • DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA

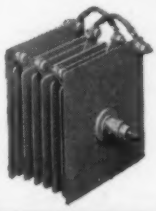
right for the job

A. C. GENERATOR

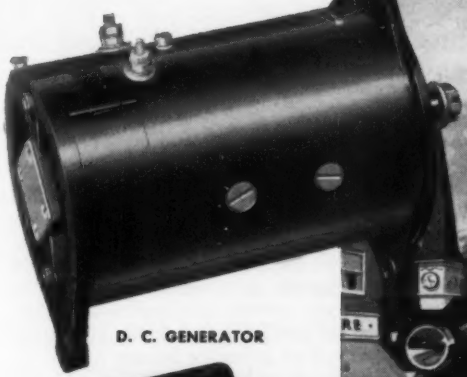


REGULATOR

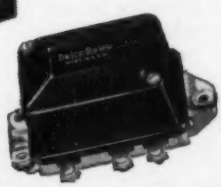




RECTIFIER



D. C. GENERATOR



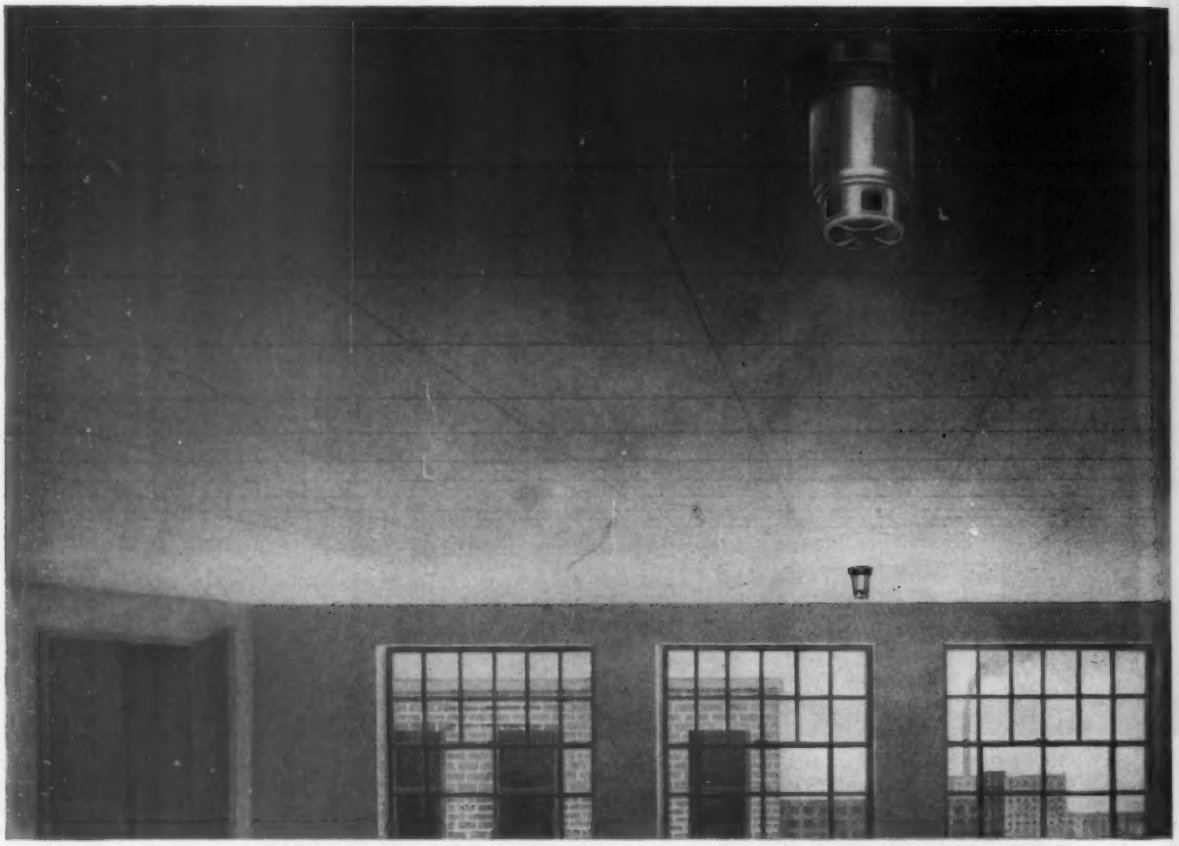
REGULATOR

A GENERAL MOTORS PRODUCT GM GENERAL MOTORS UNITED SERVICE MOTORS A UNITED MOTORS LINE

DISTRIBUTED BY WHOLESALERS EVERYWHERE

New, radio-active, automatic fire guard!

C-O-TWO PRE-DETECTOR SYSTEM



Each pre-detector head protects up to 3,600 square feet of area . . . harmless radio-active element utilizing ionization chamber principle quickly detects all forms of fire . . . requires only simple two-wire circuit and insignificant wall space for controls.

This completely new and positive means of spotting fire is just what you've always needed and wanted . . . detects in the earliest stage, invisible combustion gases, visible smoke, slow smoldering, as well as open flame. The C-O-TWO Pre-Detector System is simple to install, extremely economical to maintain and doesn't depend on thick smoke or heat for actuation.

As many pre-detector heads as necessary can be connected together in a single circuit and up to 16 separate circuits or spaces handled by one system. With a single circuit the pre-detector heads are connected directly to the fire indicating cabinet, while with multiple circuits the pre-detector heads are first connected to one or more space indicating cabinets capable of visually showing by number the exact location of the fire. Relays perform such functions as sounding alarms, closing fire doors, shutting down ventilation and releasing fire extinguishing systems.

The C-O-TWO Pre-Detector System has been subjected to extensive testing and carries Underwriters' Laboratories, Inc. listing, as well as Factory Mutual Laboratories approval. Proven pilot installations have been made in such diversified properties as a television station, an electric power company network analyzer room, a railroad signal tower, an airline flight training equipment room and the offices of an insurance company.

Don't take unnecessary chances any longer . . . the extensive fire protection experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Get complete facts about this new C-O-TWO Pre-Detector System today!

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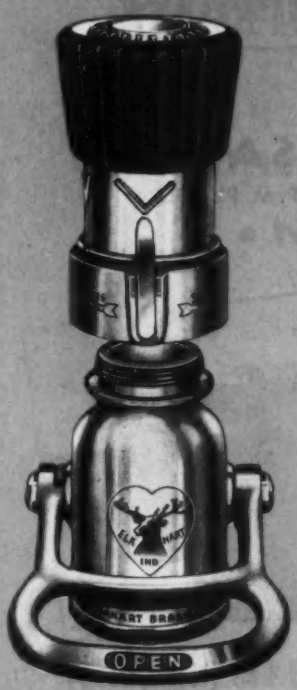
C-O-TWO

COMPLETE FIRE PROTECTION

portable fire extinguishers . . . built-in fire detecting and fire extinguishing systems

CARBON DIOXIDE • DRY CHEMICAL • VAPORIZING LIQUID • SODA-ACID • WATER • CHEMICAL FOAM • AIR FOAM



now... you can shut-off nozzle...remove tip...add hose... re-attach tip with ELKHART'S

"ST" SERIES SELECT-O-STREAM MYSTERY NOZZLE

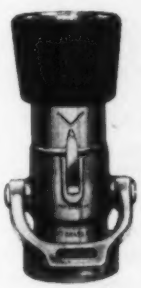
INCREASED CAPACITY: 100 lbs. nozzle pressure—30° fog—1½" discharges 125 G.P.M.—2½" discharges 275 G.P.M. (No change 1" size).

LARGE WATERWAY: Ball shut-off with full 1⅜" waterway —reduces friction loss—increases operating efficiency.

EXCLUSIVE: Embossed braille-type symbols for pre-selection of stream.

ADAPTABILITY: Detachable shut-off allows shutting down line, without disturbing hydrant or pumper, removing tip—adding an extra length of hose—attaching SOS tip.

WITH DETACHABLE SHUT-OFF	TIP (without detachable shut-off)
1" STS-200-S.O.S.	1" TS-200-S.O.S.
1½" STL-200-S.O.S.	1½" TL-200-S.O.S.
2½" ST-200-S.O.S.	2½" T-200-S.O.S.



SELECT-O-STREAM with integral shut-off
1" S-200 S.O.S.
1½" L-200 S.O.S.
2½" 200 S.O.S.

J-200—Proven dependability in field tests and under actual fire conditions—500 G.P.M. capacity —for use on hand lines—portable deluge sets—ladder pipes.

JN-200—Completes the full line of Mystery Nozzles —Delivers 1500 G.P.M.— at 30° setting 100 lb. nozzle pressure, widely used as a Master Stream Nozzle.

ELKHART gives you the complete Mystery Nozzle line

There is no substitute for quality and dependability

ELKHART BRASS MFG. CO., INC.

ELKHART, INDIANA

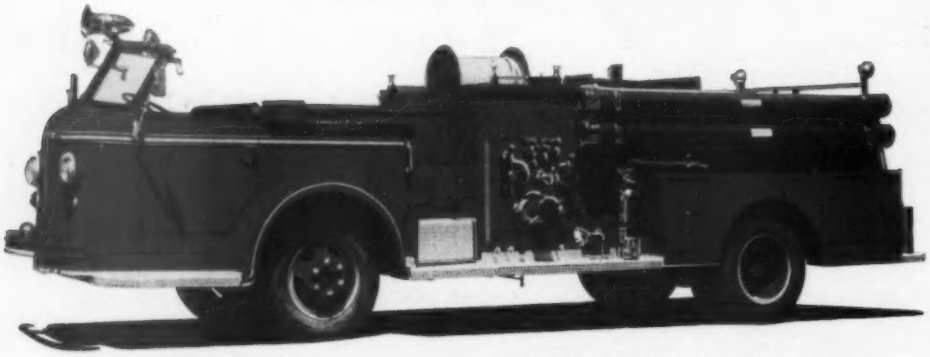
Fire Fighting Progress • Since 1902

New AMERICAN LAFRANCE

·RANGER·
500 G. P. M. PUMPER

·CRUSADER·
750 G. P. M. PUMPER

·PROTECTOR·
1000 G. P. M. PUMPER



PROTECTOR, 1000 g. p. m. Class A

Priced for *ECONOMY* . . .
Built for long service life . . .
Guaranteed by AMERICAN LAFRANCE

From the front bumper to rear step – it's an all-new fire engine – a fireman's fire engine – with the best features of American LaFrance cab-ahead-of engine models, plus some new features. It's fast on acceleration with ample power for reserve pump capacity. There are two sizes of Continental engines, 170 b. h. p. and 200 b. h. p. available for 500 g. p. m. or 750 g. p. m. pumpers. The 1000 g. p. m. pumper is powered with a 200 b. h. p. engine.

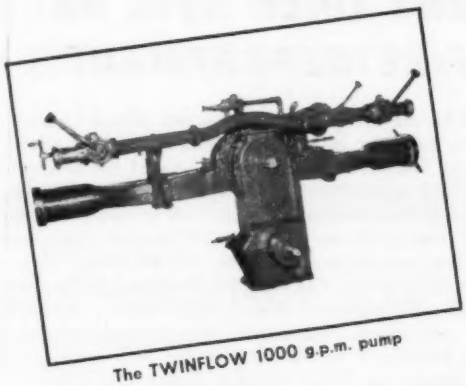
For safety in operation and smoothness of ride these new fire engines are unequalled: no bounce – no roll – no chop. Maximum of visibility for the driver; short turning radius and easy steering. Full 5 man seating with 4 inches adjustment on driver's seat. The chassis frame is rugged pressed steel with deep section (10 3-8") for maximum service life. Designed and produced expressly for fire service use, backed by the American LaFrance 5 year warranty with service available from American LaFrance for the entire operating life.

AMERICAN LAFRANCE CORPORATION
ELMIRA, NEW YORK, U. S. A.
LAFRANCE FIRE ENGINE—FOAMITE LIMITED
TORONTO, 9, ONTARIO, CANADA

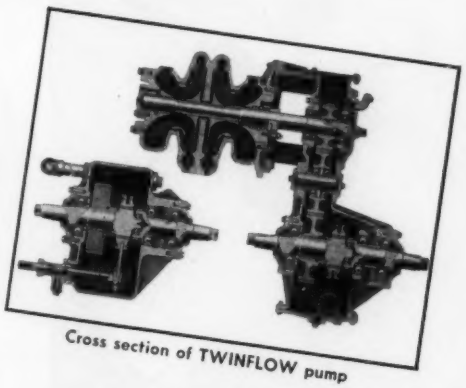
PUMPERS FOR *1956*...

Advanced Fire Fighting Features:

• NEW TWINFLOW PUMP •



The TWINFLOW 1000 g.p.m. pump



Cross section of TWINFLOW pump

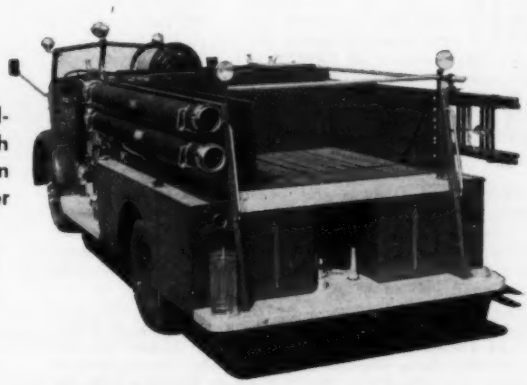
A completely new series of TWINFLOW pumps provides outstanding performance with a maximum of reliability. The pumps are centrifugal, parallel series, two stage with operating controls on left side of the body.

ENCLOSED COMPARTMENTS

Enclosed equipment compartments are an outstanding feature. Three are standard with four more available at a slight cost for a total of seven. Big enough for portable pump, portable generator, inhalators, gas masks and radio.

LARGE CAPACITY HOSE BODY

The large hose body is heavy gauge stretcher leveled steel with capacity for 1500 feet of 2½ inch hose and 400 feet of 1½ inch hose. A 300 gallon water tank is standard with larger capacity water tanks optional.



Visit Booth 62 and see this new fire engine in Space A at the I.A.F.C. Conference in Omaha, Nebraska.

AMERICAN LA FRANCE CORPORATION

ELMIRA, NEW YORK, U. S. A.

LA FRANCE FIRE ENGINE AND FOAMITE LIMITED

TORONTO, 9, ONTARIO, CANADA

ATLAS

THE ONLY NETS PROPERLY DESIGNED FOR FIRE DEPARTMENT RESCUE AND

THERE are many things we cannot afford to own. There are, however, also things which we cannot afford NOT to own. The ATLAS Life Net is one of the few commodities which you cannot afford to be without. Life Nets are still the fastest means of rescue and in many instances the ONLY means of rescue. Many lives have been snatched from fire, and most of them by ATLAS Nets. The reason is simple . . . more ATLAS Life Nets are in service! The ATLAS, with patented drop forged hinges, patented dual shock absorbers, twin-leather straps, and special woven fabric bottom, is so well engineered and constructed that it is known as "The World's Finest Life Net." These features, not found in any other net, assure you of getting the finest and safest life saving net money can buy. Remember, you can't afford to be without an ATLAS. Specify ATLAS when purchasing your new pumper or aerial, or contact us direct.

THERE is only one word in Drill Tower Training Nets . . . ATLAS. The ATLAS Training Tower Frame and Net is engineered and constructed to assure the greatest possible amount of SAFETY to firemen. Due to the SAFETY provided in ATLAS Nets, firemen develop CONFIDENCE in the early stages of their training. The majority of firemen have at one time or another trained with an ATLAS Training Tower Net, and the CONFIDENCE gained has, in part, been responsible for the fine record established by fire fighters everywhere. Fire Chiefs in small and large cities should realize the importance of Training Tower Nets, and they should be aware that their Drill Towers, whether old or new, are not complete unless equipped with an ATLAS.

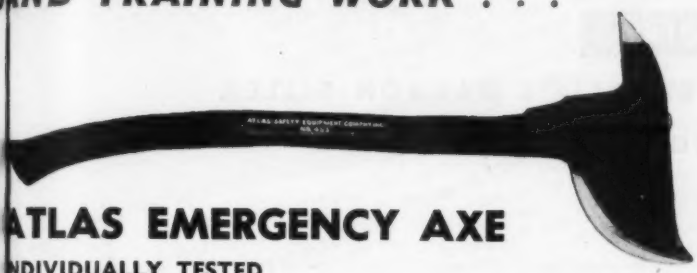
The ATLAS Net can be set up and taken down easily. A single lacing rope around the outer edge tightens or loosens the net almost instantly. Rope intersections are non-slip, insuring proper proportional strain, and the shock absorbers supplied with the ATLAS provide the proper resiliency. The above features are only a few of those which have made the ATLAS the only name in Training Tower Nets today. Each Net is tailor made. Engineers or Fire Chiefs send us the dimensions of their respective Drill Towers, and the ATLAS Net is made according to the particular requirements. Where there are questions as to technical data pertaining to the installation of Training Tower Nets, our Engineering Department furnishes recommendations without delay. This is a FREE Service, and there is no obligation whatsoever. Don't risk injury to your firemen, give them the CONFIDENCE so essential in successful fire fighting, by furnishing your Drill Tower with an ATLAS Training Net.

YOU NEVER KNOW WHEN YOU'LL NEED A LIFE NET

—the name to remember when specifying

LIFE NETS and TRAINING NETS

RLDESIGNED AND BUILT FOR CUAND TRAINING WORK . . .



ATLAS EMERGENCY AXE

NDIVIDUALLY TESTED
0 WITHSTAND
20,000 VOLTS

No. 453

A one-piece forged steel axe for cutting and prying, developed for the Armed Services, and equally useful to fire, Civilian Defense and other emergency groups. Forged steel head and handle, curved contour cutting edge. Guards prevent the head from passing completely through the wall or other surface. Handle is shaped for easy handling and balance, insulated with moulded rubber to withstand 20,000 volts. Overall length 30 inches, weighs 13 pounds.

No. 443

ATLAS CRASH AXE

Crash Axe, complete with leather sheath. One-piece steel implement. Insulated handle to withstand 20,000 volts.

Weighs 2½ pounds.

ATLAS HANDBRAKE LADDER BELT

No. 286

Leaves one hand free while sliding. Slight pressure stops descent. Improved handle provides comfortable grip while knurled handle and flared ends prevent hands from slipping. Also ideal for hook and ladder work.

ATLAS *Certified* POMPIER BELTS

No. 280

Forged steel, cadmium plated hook attached to extra-heavy web belt permits free use of hands while on ladders.

ATLAS SAFETY EQUIPMENT CO., Inc.

27 WARREN STREET, NEW YORK 7, NEW YORK

for lighter weight and GREATER STRENGTH

SPECIFY

REPUBLIC'S DACRON FILLER

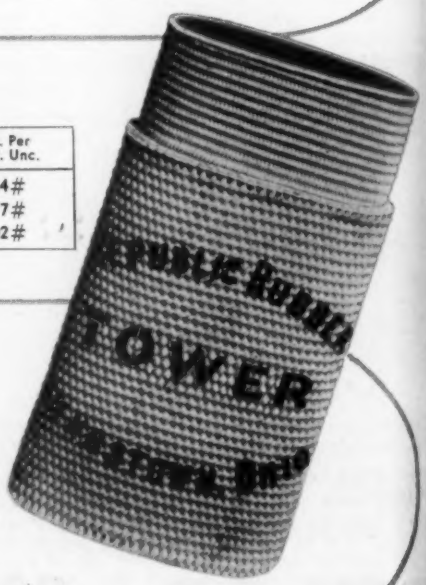
MUNICIPAL FIRE HOSE

Champion 600# Test Pressure

Size	O.D.	Test Pressure	Wt. Per C Ft. Unc.
1½"	2 "	600#	45#
2½"	3 1/16"	600#	79#
3 "	3 5/8"	600#	107#

Tower 400# Test Pressure

Size	O.D.	Test Pressure	Wt. Per C Ft. Unc.
1½"	1 31/32"	400#	44#
2½"	3 1/16"	400#	77#
3 "	3 11/32"	400#	102#



In addition to these Dacron Filler types, Republic makes two Cotton Filler, Double Jacket types: K-122 Chariot and K-127 Target, both for 400# Test Pressure.

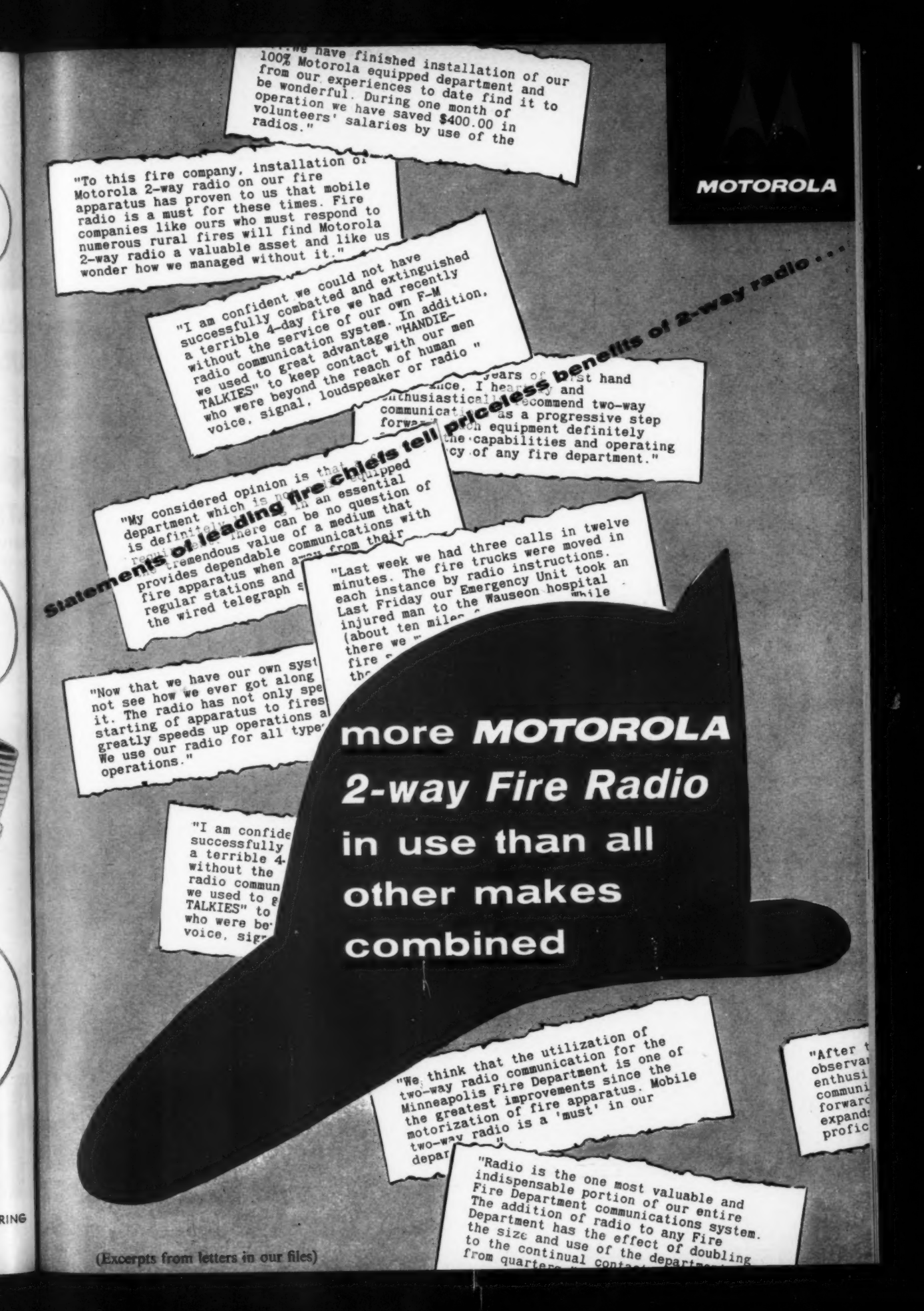
Republic Municipal Fire Hose is Provar Processed as standard construction for mildew prevention and is flat-cured, permitting easy handling and storage of more footage. Send us your order or request for quotation.

"Quality Hose Builders for Over 50 Years"

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS


...we have finished installation of our 100% Motorola equipped department and from our experiences to date find it to be wonderful. During one month of operation we have saved $400.00 in volunteers' salaries by use of the radios."
"To this fire company, installation of Motorola 2-way radio on our fire apparatus has proven to us that mobile radio is a must for these times. Fire companies like ours who must respond to numerous rural fires will find Motorola 2-way radio a valuable asset and like us wonder how we managed without it."
MOTOROLA
"I am confident we could not have successfully combatted and extinguished a terrible 4-day fire we had recently without the service of our own F-M radio communication system. In addition, we used to great advantage "HANDIE-TALKIES" to keep contact with our men who were beyond the reach of human voice, signal, loudspeaker or radio "
Statements of leading fire chiefs tell priceless benefits of 2-way radio . . .
years of first hand ...ence, I heartily and ...thusiastically recommend two-way communication as a progressive step forward. ...h equipment definitely ...e capabilities and operating ...cy of any fire department."
"My considered opinion is that ...equipped department which is not ... In an essential ...requirement. There can be no question of the tremendous value of a medium that provides dependable communications with fire apparatus when away from their regular stations and ... the wired telegraph s...
"Last week we had three calls in twelve minutes. The fire trucks were moved in each instance by radio instructions. Last Friday our Emergency Unit took an injured man to the Wauseon hospital (about ten mile... while there we ... fire ... th...
"Now that we have our own syst... not see how we ever got along ... it. The radio has not only spe... starting of apparatus to fires ... greatly speeds up operations a... We use our radio for all type... operations."
more MOTOROLA 2-way Fire Radio in use than all other makes combined
"I am confide... successfully ... a terrible 4-... without the ... radio commun... we used to g... TALKIES" to ... who were be... voice, sig...
"We think that the utilization of two-way radio communication for the Minneapolis Fire Department is one of the greatest improvements since the motorization of fire apparatus. Mobile two-way radio is a 'must' in our depar...
"After t... observa... enthusi... communi... forward... expands... profic...
"Radio is the one most valuable and indispensable portion of our entire Fire Department communications system. The addition of radio to any Fire Department has the effect of doubling the size and use of the department... to the continual contact... from quarters...
(Excerpts from letters in our files)

MOTOROLA'S *big voice* 2-wa

LETS YOU HEAR OVER SIRENS, WIND-RUSH, ENGINE AND TRAFFIC NOISE ... CHANGES TO PUBLIC ADDRESS AT THE *FLIP OF A SWITCH*

- ***High Power Audio Output***
- ***P.A. or Receiver Booster***
- ***Universal 6/12 VDC Operation***
- ***Low Battery Drain***
- ***Noise-Cancelling Microphone***
- ***Weatherproof Speaker***

On apparatus speeding to a fire with siren screaming and engine roaring—and amid the noisy activity at the fire scene, the "Big Voice" of this new Motorola Fire Radio can be heard clearly. Even the most powerful unmuffled pumper can't drown it out. The high quality, weatherproof speaker reaches out with *10 times more audio power* than conventional units to assure positive communication under actual fire fighting conditions. The Fire Chief is in contact with *all* units at *all* times.

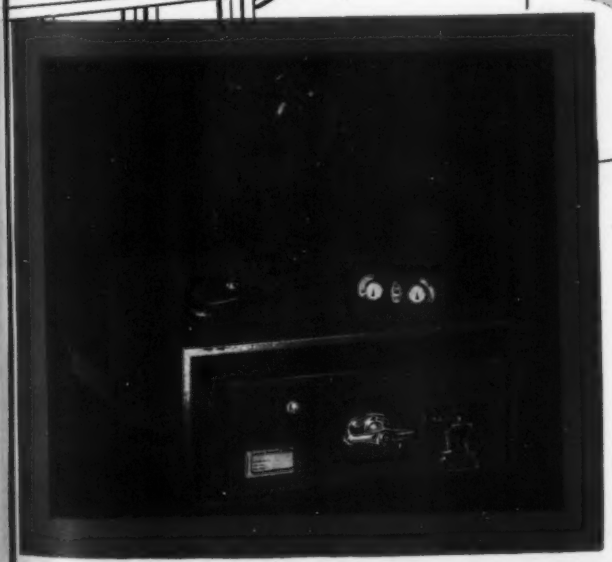
Motorola's "Big Voice" serves double-duty—as a 2-way radio *or* as a public address system, switching back and forth in a split second. The dash mounted volume control is easily adjusted to any desired level.

In Motorola's perfectly integrated system, the "Handie-Micro-Talkie" transmitter can also be used as a "wireless microphone" for giving on-the-spot instructions over the "Big Voice" loud-speaker.

This ruggedized, easy-to-install, low cost package is custom-designed for fire service and contains *all* the equipment for an effective, functioning 2-way mobile radio installation.

MOTOROLA

2way fire radio



10 times
more powerful
than
conventional
mobile radios

MOTOROLA

Portable 2-WAY RADIO

For constant contact with all personnel at and in the fire

Fires and other disasters often find firemen fighting on many fronts, covering several blocks. Equipped with Motorola Handie-Talkie® radiophones, firemen, in burning buildings, or out of sight of other firemen, can report conditions, call out for help to put out the blaze or remove an injured person, or warn of some danger. The Battalion Chief stationed in his car, can tie in all activities of every fire-fighting team.

Light in weight and compact, the Handie-Talkie® radiophone is easily handled and completely self-contained. Either single or dual transmitter models are available, which range from a half mile under difficult conditions to several miles under favorable circumstances. Power is supplied by either wet or dry cell batteries and servicing is simplified by unique construction.

Your nearby Motorola engineer will be happy to check your present set-up, talk over your needs and wants, and show you how a Motorola 2-way radio system will save money and increase the fire-fighting efficiency of your fire department.

Write, phone or wire **TODAY!**

MOTOROLA
2-WAY FIRE RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
ROGERS MAJESTIC ELECTRONICS LTD. TORONTO, CANADA

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering . . . product . . . customer service . . . parts . . . installation . . . maintenance . . . finance . . . lease.
"The best costs you less—specify Motorola."

PRINTED IN U.S.A.

Columbus, Ohio, Fire Department reports:

"Lightweight, easy-to-handle hose made with Dacron cuts our repair costs"

REG. U. S. PAT. OFF.

Flexible hose made with "Dacron" polyester fiber, at left, coils and racks more compactly and dries faster than conventional hose. The Columbus Fire Department reports that it gets into action faster, too.

"We have 35,000 feet of hose made with 'Dacron' and we're very enthusiastic about it," says Walter G. Strickfaden, Chief of the Columbus, Ohio, Fire Department. "Our storage space is limited, and hose made with 'Dacron' takes less of it. One man can easily carry 200 feet of this lightweight hose.

"Hose made with 'Dacron' has cut our department's repair costs, too. Before we started using hose made with 'Dacron', we used to have 10 to 12 sections of 50-foot hose to repair per company. Now some companies need no hose repair at all."

The Columbus Department is a typical example of the way fire departments across the nation are obtaining increased all-around performance from hose made with Du Pont "Dacron"* polyester fiber. Used as the load-carrying "filler" cord that reinforces the hose, this man-made fiber produces a hose that's light and flexible—yet *stronger* than ordinary hose of the same construction.

Du Pont makes "Dacron" yarn and supplies it to hose manufacturers. The combination of the unusual properties of "Dacron" plus hose manufacturers' skill has resulted in a superior type of fire hose. Hose made with "Dacron" is produced by all leading fire-hose manufacturers. The next time *you* need hose, be sure it's made with "Dacron". E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

**"Dacron" is Du Pont's registered trade-mark for its polyester fiber.*

ADVANTAGES OF FIRE HOSE MADE WITH "DACRON":

- **Lighter**
- **Stronger**
- **More flexible**
- **Cuts loading time**
- **Saves space**

DACRON

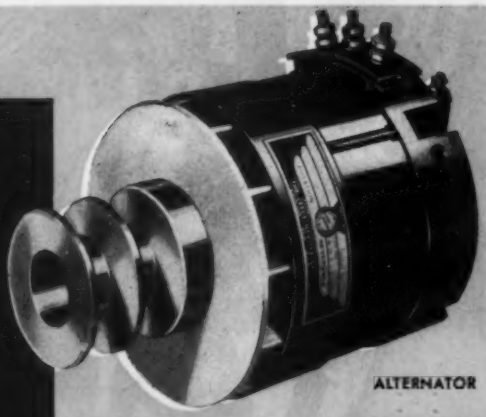
POLYESTER FIBER*

DU PONT

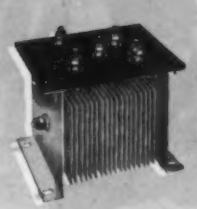
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Leece-Neville



ALTERNATOR



RECTIFIER

REGULATOR

New AC-DC ALTERNATOR SYSTEM DELIVERS *125* Amps

Weighs only 44 lbs.
Costs much less than comparable d.c. system

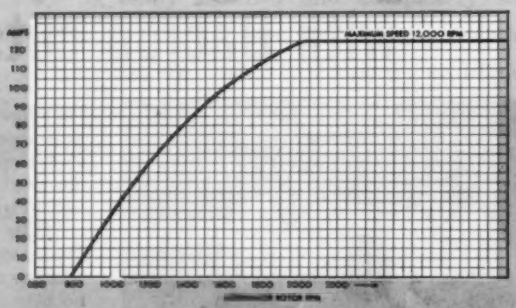
At the price you formerly paid for a 100 ampere L-N Alternator System, you now get 125 amperes . . . and at a cost far below that of a d.c. generator.

Built on a 6⅜ inch diameter frame, the Alternator weighs only 27 lbs. Rectifier and Regulator bring the total weight of the generating system to only 44 lbs. Compare that with the weight of a d.c. generator of the same output and you'll find an important weight saving.

The performance curve shows the low cut-in speed and rapid attainment of full output. Charging current at engine idle speed will vary with drive ratio.

This new L-N Alternator System is ideally suited for many types of vehicles with 12 volt electrical systems: buses, trucks, trolley coaches, school buses, fire trucks, mine and construction equipment. For applications requiring a fan-cooled rectifier, an Alternator with a shaft-mounted fan at rear is available.

PERFORMANCE AT 12 VOLTS



There are L-N Alternators with capacities ranging to 95 amperes for 6 volt systems; to 180 amperes for 12-volt; to 100 amperes for 24 volt; and to 50 amperes for 32 volt. All of them have the rugged design and precision manufacture that give L-N Alternators unmatched reliability and long life. Be sure to specify Leece-Neville.

Since 1946, L-N Alternators have been helping fleet owners cut operating and maintenance costs. For all the facts, write The Leece-Neville Company, Cleveland 3, Ohio. *Distributors in principal cities . . . service stations everywhere.*

YOU CAN RELY ON Leece-Neville

Automotive Electric Equipment Since 1909

TRUCK • BUS • DIESEL • INDUSTRIAL • PASSENGER • RAILROAD • MARINE • OFF-HIGHWAY

ALTERNATOR SYSTEMS

D C GENERATORS

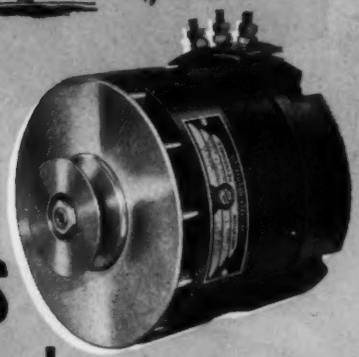
CRANKING MOTORS

REGULATORS

SWITCHES

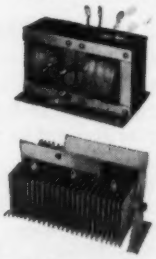
SMALL MOTORS

Leece-Neville



AC-DC ALTERNATOR SYSTEMS Guarantee the Current You Need to Get to the Fire... and to Fight the Fire

110 VOLTS FOR POWER TOOLS, LIGHTS



Installation of a Leece-Neville Transformer and 110 volt Rectifier with your L-N Alternator will provide up to 1200 watts of 110 volt d.c. current for spot and flood lights, half-inch drill, power saw etc. Send for special bulletin.

A GENUINE L-N ALTERNATOR AT A SENSATIONAL LOW PRICE

For loads up to 60 amps at 6 volts or 50 amps at 12 volts, see the new L-N Standard Alternator System that costs *less* than "extra" output d.c. generator.

Sirens, lights and 2-way radio make a heavy electrical load that can drain the battery. Leece-Neville Heavy-Duty Alternators, which replace conventional d.c. generators, have the capacity to carry the load: up to 95 amperes for 6 volt systems; to 180 amperes for 12 volt; to 100 amperes for 24 volt.

At the fire, L-N Alternators produce up to 40 amperes with the engine idling, keep batteries "up" and permit use of 2-way radio.

THE ORIGINAL AC-DC GENERATING SYSTEM—RECOGNIZED EVERYWHERE

Since 1946 more and more Fire Departments have made L-N Alternators standard. Some of these are Atlanta, Boston, Buffalo, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, Miami, Montreal, New York, Pittsburgh, Toronto, and many others, large and small.

Be sure to specify Leece-Neville on new apparatus and in your modernization program. For all the facts, and name of your L-N Distributor, write The Leece-Neville Company, Cleveland 3, Ohio. *Distributors in principal cities . . . Service Stations everywhere.*

YOU CAN RELY ON Leece-Neville

Automotive Electric Equipment Since 1909

TRUCK • BUS • DIESEL • INDUSTRIAL • PASSENGER • RAILROAD • MARINE • OFF-HIGHWAY

ALTERNATOR SYSTEMS

D C GENERATORS

CRANKING MOTORS

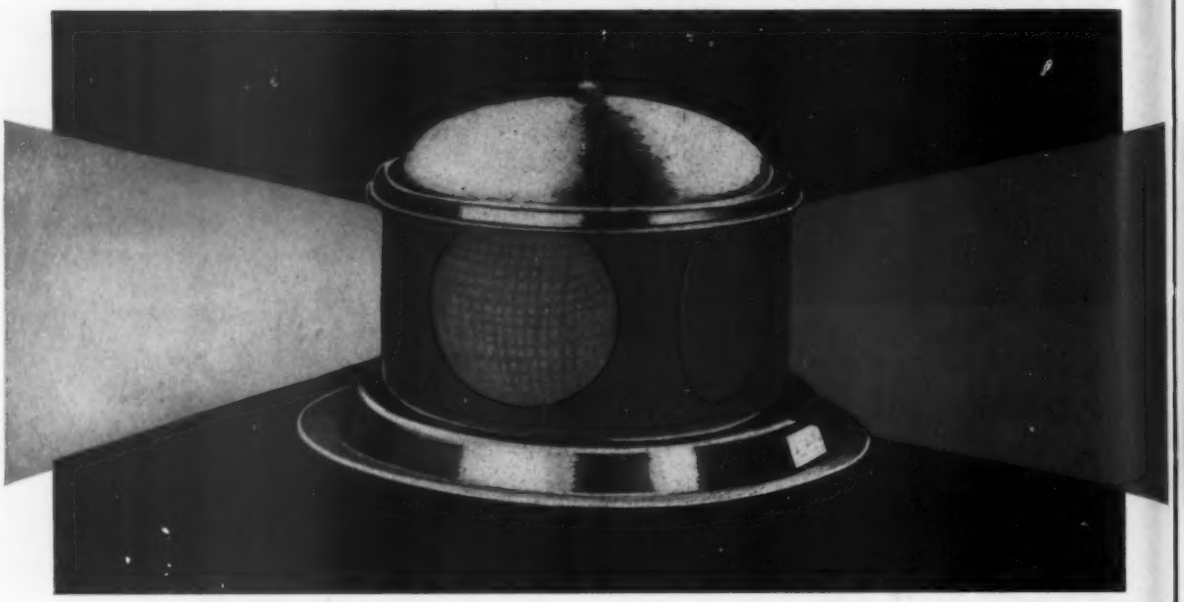
REGULATORS

SWITCHES

SMALL MOTORS

"CIRCLE BEAM" ®

Complete Vehicle Protection



NOW AVAILABLE IN TWO TYPES — BOTH HAVE THESE UNIQUE FEATURES

Shielded from the sun to increase daytime efficiency
Metal top provides against lens breakage
Designed for ease of service and inspection

MECHANICAL ROTATION BEACON TYPE
Series 1006 and 1012

Units may be interchanged between 6 V or 12 V cars with minimum attention without replacing motors and without loss of efficiency.

Operating mechanism always instantly visible for service and inspection. The entire mechanism can be replaced in 10 minutes without removing the light from the roof.

Speed adjustment to take care of line voltage drops.

ELECTRO-MAGNETIC PULSE TYPE
"Nothing moves but the beam"
Series 806 and 812

Synchronized flashing of a double beam of light gives an effect of rotation with protection forward to the sides and rear.

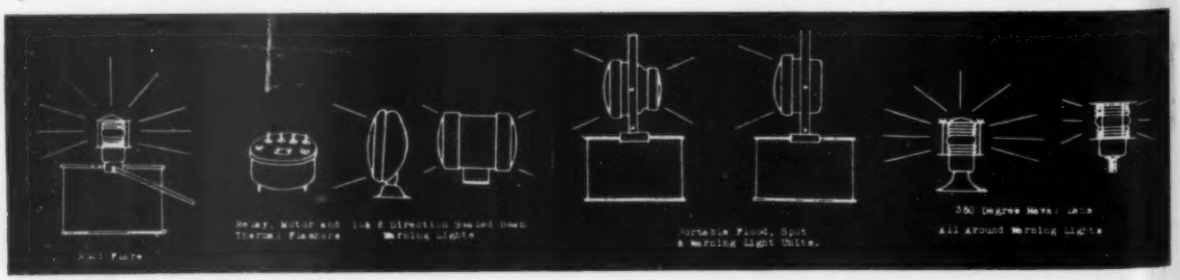
There is no motor to drive and practically all the energy goes into the lights. Flashing is obtained from the time-tested "MULTI-PULSE" TG high efficiency flashers. These lights are effective DAY and NIGHT. They use high-intensity sealed beam lamps easily replaced and have low battery drainage and negligible maintenance.

THE INDIVIDUAL FLASHES LAST LONG ENOUGH SO THAT A MOTORIST CAN ESTIMATE THE DISTANCE TO APPROACHING APPARATUS AND GET OUT OF THE WAY IN TIME. Available for flat roof, stanchion or adjustable slope roof mountings.

Ask for details on: "Circle Beam," Portable Work-Warning Lights, Vehicle Flashers or Traffic Blocking warning lights for scenes of accidents and at hose lines.

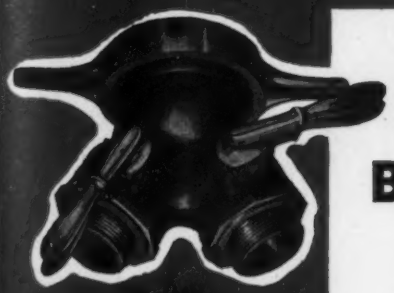
DESIGNED TO "SAVE LIVES WITH LIGHT"

JULIAN A. McDERMOTT CORP. 40-42 NATIONAL ST., CORONA, N. Y.

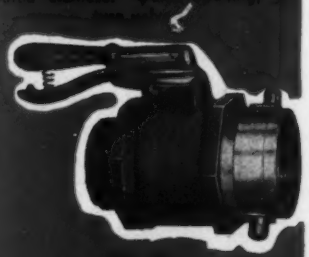


Headquarters for Fire Department

BRASS GOODS



4½" screw female x two 2½" male Gated Siamese. Quick opening, [illegible]



Made either Right Hand or Left Hand 2½" male x female, gate valve.

McINTIRE BRASS WORKS

Pioneers in Nozzle Manufacture

ORIGINATORS

and Sole Mfrs. of

INVINCIBLE NOZZLES

We invite figuring or bidding on all types of brass work

Fig. 184

"MORSE" SHUT-OFF NOZZLE AND PLAYPIPE COMBINATION

FIREBOAT TOWER NOZZLE

Operated by Remote Control

with full Transverse Control

Figure 114-B — one of many — made by pioneers in nozzle manufacture.

AUTOMATIC-OPERATING SHUTTER AND SLIDING POLE

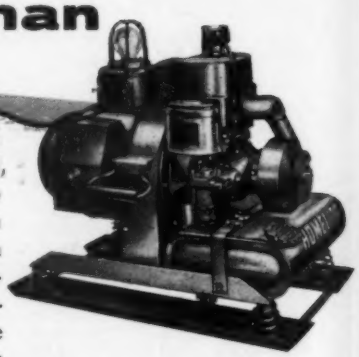
for the FINEST BRASS GOODS

Specify McINTIRE

18 feet high, 4500 G. P. M. 5% Np.

F. N. McINTIRE BRASS WORKS 377 Putnam Avenue Cambridge 39, Mass.

Save That Fireman



Night alarms are dangerous alarms. Added to unexpected hazards in controlling fires are the invisible dangers of working at top speed in semi or complete darkness. Pits, wires, and objects hidden in darkness on the grounds or in a structure take their toll in fire-fighting accidents each year.

A dependable Homelite gasoline engine driven generator can expose these invisible dangers by flooding them with light. It saves lives and reduces fire-fighting accidents. It can be carried by one man to the best location and floodlights on extension lines can be placed, in darkened areas to expose objects on grounds and in buildings. Important too, floodlighting speeds up the efficiency . . . helps firemen work faster . . . get the blaze under control quicker. Ask your Homelite Representative for a demonstration or write for complete information.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE
CORPORATION
309 RIVERDALE AVENUE • PORT CHESTER, N. Y.
A TEXTRON AMERICAN COMPANY

Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Ottawa

YOU CHANGED THE TRUCK... HOW ABOUT THE LADDER?

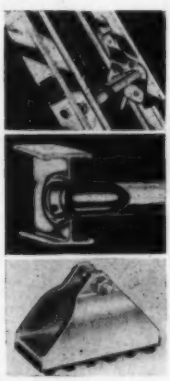
modernize with the new WERNER "900" ALUMILADDER

This isn't change just for the sake of change. This is progress. The WERNER "900" offers a low cost, practical replacement for old, heavy, bulky wood ladders. A WERNER "900" has several advantages over other aluminum ladders, as well.

WERNER'S "900" Alumiladder puts less weight on your engine, giving you "more ladder footage per horsepower". A WERNER aluminum ladder is also lighter, easier to handle, and has an elastic strength limit of 3000 pounds per square inch at 600 degrees fahrenheit – the temperature at which wood ladders no longer have any elastic limit.

Be safe! Be sure! Modernize your department with the new "900" ALUMILADDER by WERNER... America's Largest Producer of Aluminum Ladders.

Available in section ladders from 6' to 20', two-section extension ladders from 20' to 40', and three-section extensions from 40' to 60'.



Spring loaded safety locks that provide a secure grip between extension ladder sections.

New "I-beam" channel construction gives maximum strength, safety and rigidity at all working lengths.
"Alflo" rung joints hydraulically locked to the side rail. Rungs cannot loosen.
Larger rungs with deeper corrugation, making them slip-resistant.

Heavy duty aluminum safety shoes with skid-proof corrugated rubber treads.

WERNER ALUMINUM
SAFEST LADDERS IN THE WORLD

For complete information on how to up-date your fire ladders write to:
R. D. WERNER CO., 295 Fifth Avenue, New York 16, N. Y.

Complete line of ALUMINUM STAGING, SCAFFOLDING, ROLLING TOWERS, SECTIONAL LADDERS, CUSTOM MADE EQUIPMENT

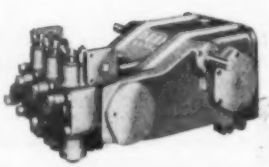
See for yourself the John Bean HPV* Fire-Fighter that has all these features

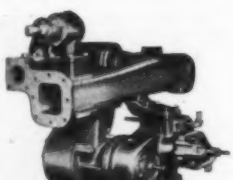
VISIT
BOOTH 70
AT THE
IAFC
CONVENTION

*HPV — the two-fisted fire-fighter with both High Pressure Fog and Volume pumps (plus John Bean High-Pressure Sno-Foam at low extra cost).

TRUE HIGH-PRESSURE AND MULTI-STAGE PUMPS OPERATE SIMULTANEOUSLY

Operate them together or singly — the John Bean High-Pressure Fog piston pump, delivering 60 GPM at 850 PSI pump pressure — and the John Bean centrifugal volume pump, providing a smooth flow at 500, 600 or 750 GPM.





DUAL BATTERY SYSTEM
Auxilliary battery insures against starting failures.

VACUUM-OPERATED PUMP SHIFT
Quick, positive, trouble-free shifting of volume pump.

THE PATENTED JOHN BEAN FIRE-FIGHTER GUN

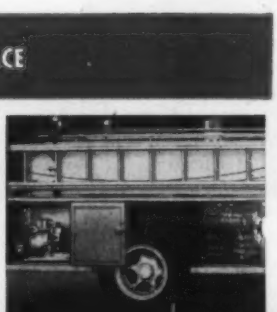
The fireman has perfect control of stream patterns with this famous gun. Instant on-and-off control of discharge with one hand — other hand rotates barrel for a complete range of fog patterns. Face-protector spray allows fast, close approach to hot fires. Hose extending from back of gun provides straight-flow waterway for best performance and easiest handling.

This two-fisted fire-fighter stops fires faster!

The "HPV" gives you two lines of fast-striking John Bean High-Pressure Fog . . . the *original* high-pressure fog . . . discharged from the guns at 600 to 700 PSI nozzle pressure. Only this true high-pressure fog has such effective triple action — to cool, to smother, to isolate flames in seconds — with 90%

OVER 45 CUBIC FEET OF WEATHERPROOF STORAGE SPACE

Five, large capacity, lighted compartments are built in—one tailored for slide-mounted generating equipment; another for portable water pump. Compartments are fitted with easy opening, flush-type door latches.



TERIZED
COMPARTMENTS

ovable enclosures win- the two reel compart- s. These, as well as p, valves, gauges and rols, are warmed by en- heat.

POWER REWIND HOSE REELS

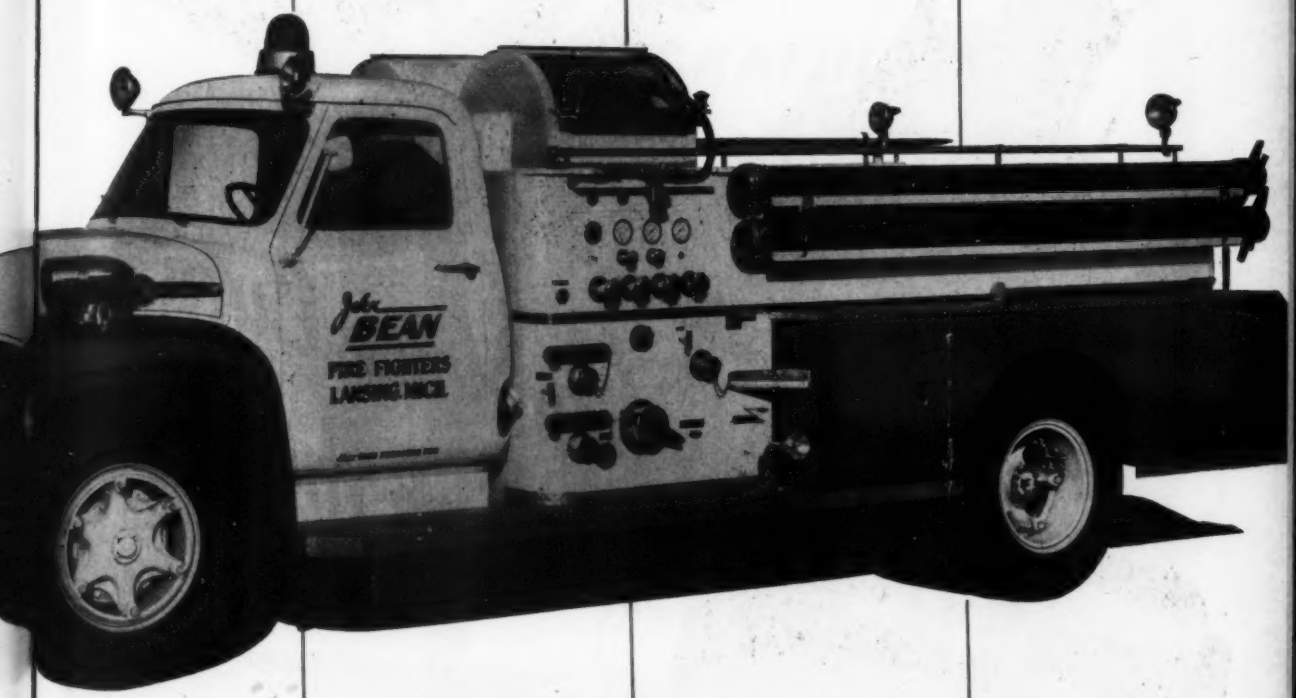
Faster, easier hose pick-up with power operated reels. Hose lays out smoothly and easily over roller guides.

400 FEET OF HIGH-PRESSURE HOSE

The 200 feet of special, 3500 pounds burst test hose on each reel can be easily handled by one man.

SPACIOUS HOSE BED

Smooth, level hose bed is properly ventilated, carries 1200 feet of 2½-inch and 400 feet of 1½-inch volume hose.



LUMINATED
NTROL PANEL

l gauges, valves and con- ls are centralized for in- nt operation — illumin- ed for safety and easy ding at night.

BONDERIZED FINISH

For longer life and better paint finish, patented bonderizing process is used on all metal surfaces.

40 FEET OF SUCTION HOSE

Standard equipment includes two 10-foot lengths each of 2½-inch and 4½-inch hard suction hose, complete with hydrant adapters and suction screens.

500-GALLON, 10-GAUGE STEEL TANK

Smooth cornering, starts and stops assured by six-compartment tank with low center of gravity. Prevents undesirable water surge.

ohn Bean Fire-Fighters can be mounted on most standard truck chassis

ss water damage. Fire extin- uishing value of water is in- reased by a ten-to-one ratio — akes the 500 gallons of water n the truck go ten times fur- er.

dd to this, the truck's multiple nes of hard-slugging, Under- riters' approved volume reams and you have an un- eatable combination. Two reat John Bean pumps . . . o proven methods of fire- ghting. Use them separately r both at the same time — in ny combination. And for fight- ing grass and brush fires, use high-pressure fog while the truck is in motion.

Because they're designed by firemen . . . men who've fought fire under all kinds of conditions . . . John Bean equipment is designed right for ease of operation. Arriving at a fire, you're in business with four easy steps. Put pump in gear, step out of cab, open valve, adjust throttle for RPM — and presto! your lines are ready for instant action.

The proof is in the doing.

See for yourself what a John Bean HPV Fire-Fighter will do for your community's fire safety. In Lansing, Michigan, you'll get expert instruction and actual practice in volume and high-pressure fog methods at John Bean's Fire-Fighting School. In the meantime, why not contact your local John Bean representative, or write factory direct. In many localities, a demonstration can be arranged for you.

ASK FOR THE JOHN BEAN HPV CATALOG

JOHN fmc® BEAN

Dept. 126
Lansing 4, Michigan

P.O. Box 145
San Jose 3, California

A Division of Food Machinery and Chemical Corporation

Your Voice Cuts through the Din!

AUDIO Hailer

Amplifies your voice 1000 times • self-contained • portable • light-weight • battery operated • weather proof

In emergency and rescue work, Audio Hailer gives a fire-chief the power to speak *directly — instantly — to every one of his men* — over the din of a fire. Apparatus and equipment can be shifted — manpower can be re-deployed — sudden perils can be averted — without a second's delay.

Experienced fire fighters call Audio Hailer *"the most useful single piece of equipment in the house"*. Ask your supply dealer for a demonstration. Or write for brochure.

AUDIO EQUIPMENT CO., INC., 805 Middle Neck Road, Great Neck, N. Y.

CONGRATULATIONS

IAFC

The International Association of Fire Chiefs is to be commended for the splendid work it is doing toward the advancement of the Fire Service.

The Bi-Lateral Fire Hose Company says:

"Every Fire Chief should be a member of IAFC"

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COLORADO, DENVER
Fire Protection, Inc.
1017 Lawrence

CONNECTICUT, OLD GREENWICH
Orville A. Sawyer
P. O. Box 73

FLORIDA, CORAL GABLES
O. C. Wipper
P. O. Box 714

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Great Lakes Fire Equip. Co.
Michael Dalton and Erv Simek

INDIANA, INDIANAPOLIS
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BI-LATERAL'S DISTRIBUTORS AND DEALERS throughout the country join the Bi-Lateral Fire Hose Company in their full cooperation with INTERNATIONAL at all times.

BI-LATERAL FIRE HOSE CO.

20 NORTH WACKER DR.
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Sustaining member of IAFC

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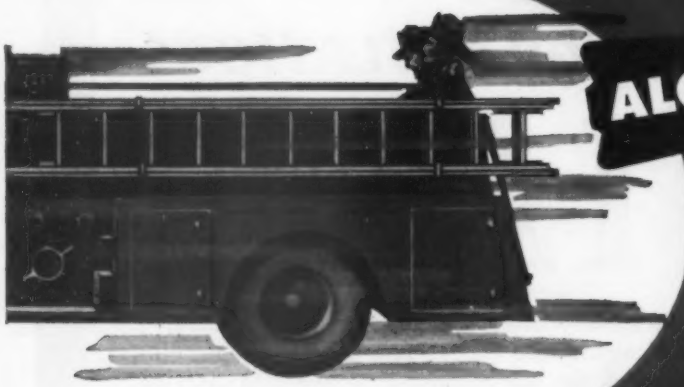
Bi-Lateral Fire Hose, Kitchener, Ontario

OFF TO A GOOD START!

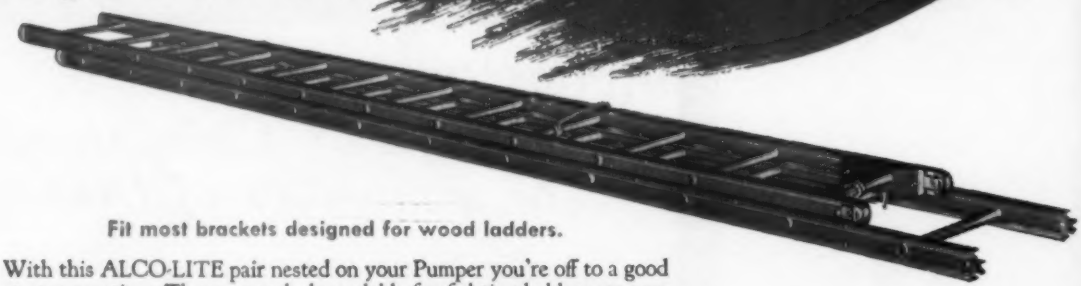
with



ALCO-LITE

PUMPER EXTENSION and PUMPER ROOF LADDERS

designed for short wheelbase Pumper Trucks



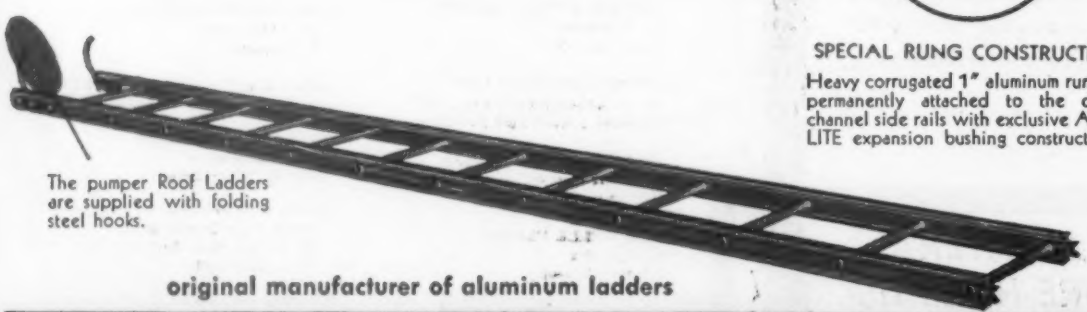
Fit most brackets designed for wood ladders.

With this ALCO-LITE pair nested on your Pumper you're off to a good start every time. These rugged, dependable fire-fighting ladders are constructed of industrial type aluminum alloy according to exclusive ALCO-LITE specifications. They won't rust, rot, splinter, spark or burn and require almost no maintenance.

The PEL and PRL Ladders are ideal replacements for your outmoded wood ladders or as original equipment on your new Pumper. Specify ALCO-LITE everytime. The nested thickness of the PEL and PRL Ladders is only 6⅞".

SPECIAL RUNG CONSTRUCTION

Heavy corrugated 1" aluminum rungs are permanently attached to the double channel side rails with exclusive ALCO-LITE expansion bushing construction.



The pumper Roof Ladders are supplied with folding steel hooks.

original manufacturer of aluminum ladders

Aluminum Ladder Company

WORTHINGTON PENNSYLVANIA

Seagrave V—12

300+ H.P.

The engine designed and built by Seagrave exclusively for fire service

"The Greatest Engine Ever Built for Fire Service"—that's the consensus of opinion of the new Seagrave 906 V-12 with 300 plus H.P.

Seagrave has been building fire apparatus for seventy-four years and producing V-12 engines for better than twenty years. It is all these years of experience plus Seagrave's matchless engineering and mechanical skill that has gone into the designing and production of the new 906 Engine.

The 906 Seagrave V-12 is made for fire service and for no other purpose. It is an engine of tremendous power and has power to spare for hour after hour of the toughest pumping. There is silken-smooth, effortless action which means freedom from vibration, more rapid acceleration.

This is not a "souped-up" model. It contains all the well proven features of other Seagrave V-12's plus many new innovations to give increased power, perfect performance and trouble-free service. No other engine equals it for fire service.

THE SEAGRAVE CORPORATION—Columbus, Ohio
Bickle-Seagrave, Ltd.—Woodstock, Ont.

Seagrave—THE GREATEST NAME IN FIRE APPARATUS

Radio serves vital city departments in Fort Worth

Police, Fire, Utilities, and Civil Defense Functions in Fort Worth, Texas Are G-E Radio Equipped.

City departments radio equipped

The City of Fort Worth is an example of modern city government in action. Major city departments are equipped with two-way radio for instant coordination of operations.

Three systems—one tower

Three separate radio systems are controlled from central Radio Division headquarters, beamed from a single antenna tower. Base station dispatch points spotted throughout the city are in contact with other departments and nearly 300 mobile radio vehicles. Additional transmitters are on standby service.

Fort Worth's Radio Division tower also serves as transmission point for radio system of Tarrant County Volunteer Firemen.

Fort Worth's modern Civil Defense communication center, located outside the city, is also equipped with two-way radio to back up and coordinate existing radio systems.

New Progress Line

New Progress Line radio equipment provides rack mounted construction, true plug-in chassis. Exclusive design permits changes in frequency, power, type of reception quickly—at a minimum cost. Let a G-E Communications Counselor analyze your municipality's radio needs, develop an installation based on long range requirements. See him, or write: *General Electric Company, Communication Equipment, Section X5995, Electronics Park, Syracuse, New York.*

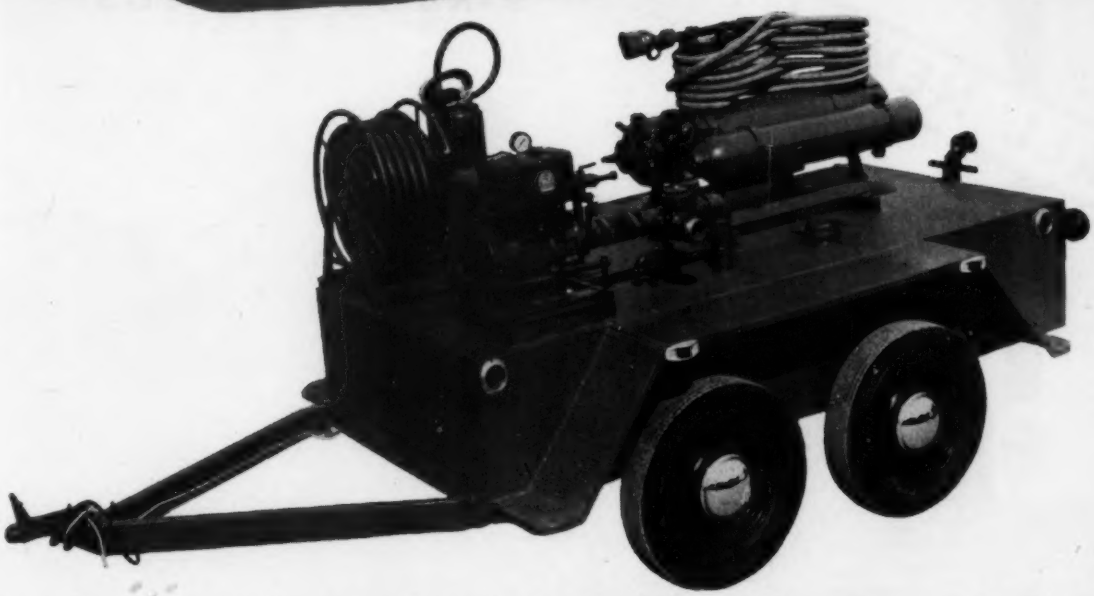
2-WAY MOBILE RADIO

18 station transmitters link vital city offices, nearly 300 G-E radio equipped vehicles. Here a Radio Division mobile unit rounds a corner near the Municipal Fire Academy. Antenna tower in background beams separate signals serving all departments.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Wherever there's Danger of FIRE... there's Need for the Paris FIREFIGHTER!

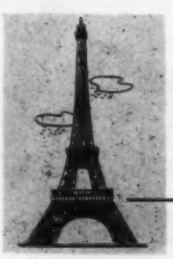


It's a small Fire Department ready to Knock-out Fire wherever it Occurs.

• Sturdy 4' x 8' x 18" steel trailer mounted on 4 wheels with 2 level load axles. Mounted atop the trailer body is a Gorman-Rupp exhaust-priming, sure-starting Dual Fire Fighter Pump, 100 ft. of 1" high pressure hose, 150 lb. dry chemical tank (with 50 ft. of hose) pivot mounted for raising to upright position for easy re-filling, and 30 lb. hand extinguisher. Thirty feet of 2½" suction hose carried in special compartment at rear of trailer.

Included among the many features of the Paris Firefighter are centralized control valves in the piping arrangement that pump water from the 360 gallon trailer tank and can also pick up additional water from a nearby pond, ditch or reservoir, or directly from a fire hydrant. Water can be taken from these same sources to refill tank. Trailer hooks up to a car or truck by means of a quick latching safety hitch. For added safety the trailer is equipped with electric brakes, rear and side lights and steel plate fenders.

Why not put this small fire department to work for you. For wherever there's danger of fire—there's a definite dollar-and-cents need for the Paris Firefighter. Write today for detailed information.



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OIL WELL, REFINERY AND INDUSTRIAL SUPPLIES

1125 ROTHWELL ST. • P. O. BOX 932 • HOUSTON, TEXAS

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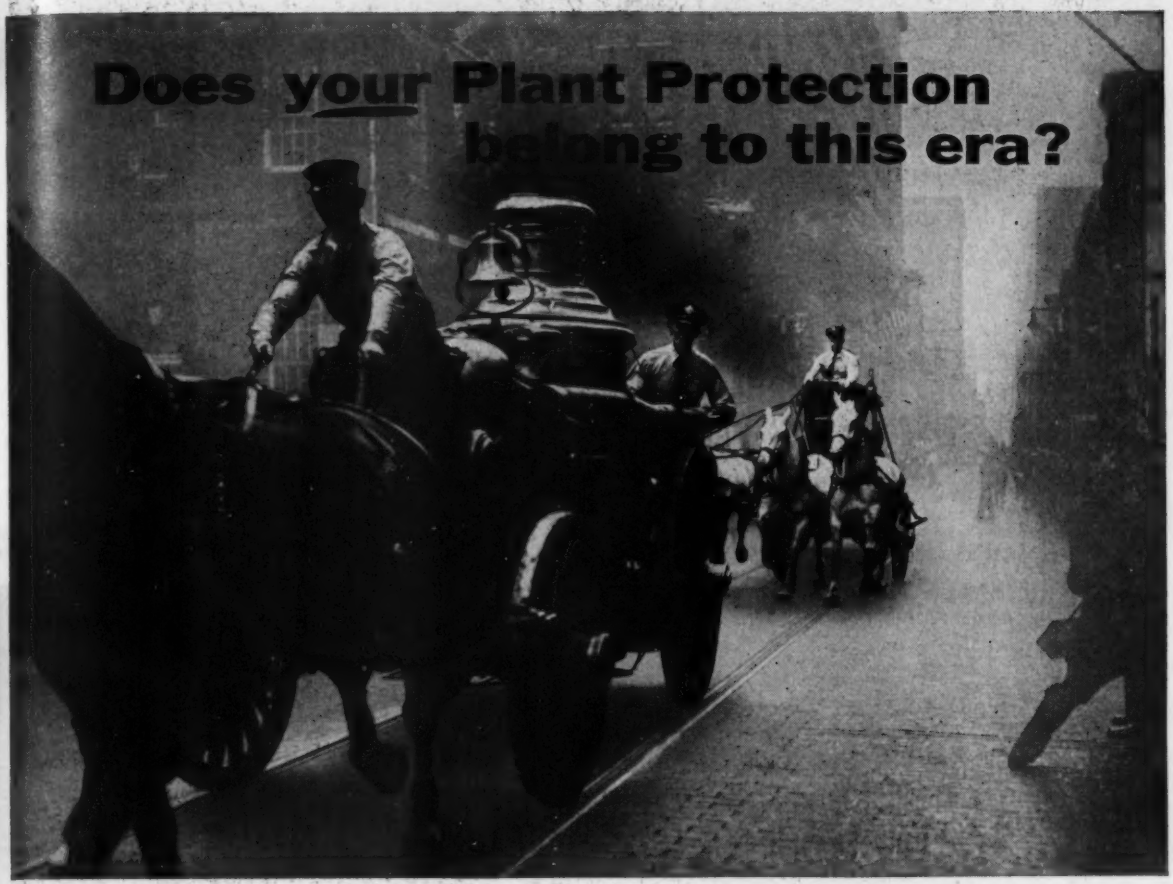
750 TO 1,500 G.P.M

ALL NEW

CUSTOM-BUILT
TRIPLE COMBINATION
FIRE APPARATUS

MULTI-SERVICE CENTRIFUGAL PUMPS
•
HIGH-OUTPUT OVERHEAD VALVE ENGINES

USING HALE PUMPS
. . . EXCLUSIVELY



Let Us "FIRE-ENGINEER" a system for your plant with AER-O-FOAM

The science of fire-engineering has come a long way since the era of the horse-drawn fire engine. Now you can protect your flammable liquid fire hazards by calling in National Foam engineers, who survey your plant and plan a modern fire-engineered system for your particular needs. They check locations, processes, flash points, existing system, water supply, and other factors. They recommend a basic AER-O-FOAM System with manual or automatic control, stationary or mobile operation, and all the proper equipment . . . foam chambers, overhead units, dip-tank systems, nozzles, extinguishers. After installation, National Foam furnishes a complete operating manual.

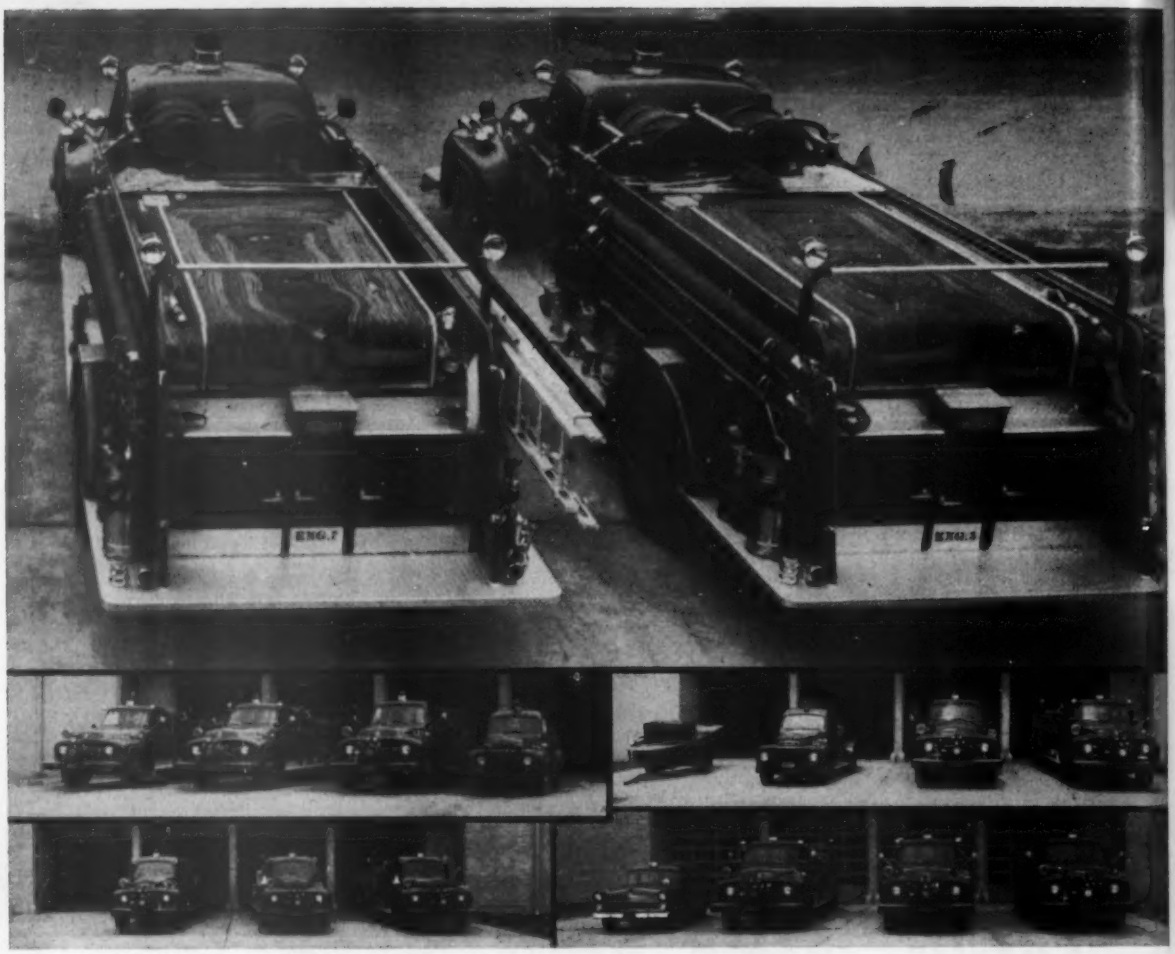
National Foam's modern fire-engineered service offers the best in system design, equipment, and instant, positive, fire-tested AER-O-FOAM. Call in National today to discuss your flammable liquid fire problem.

Write for new, free booklet, "Foam Fire Protection"

NATIONAL

FOAM SYSTEM INCORPORATED

Headquarters for Foam Fire Protection — WEST CHESTER, PA.



Lightweight dacron hose saves space, strain, time for this fire department

Poised for prompt action! That's the immediate idea conveyed by these sleek trucks of Sedgewick County, Kansas, fire department. And an important contribution to fast action is the compact hose in those truck beds. It is Quaker's Dacron hose . . . flexible for rapid transfer from truck to fire . . . lightweight for fast, strain-free handling.

These are not the only reasons why 21,000 feet of this Dacron hose is practically standard equipment at all four of the county's fire stations. Another reason is the 50% greater pressure it withstands compared to conventional hose. Another is its rugged resistance to heat, chemicals, abrasion. Another reason is that it folds flat permitting greater footage with less bulk in truck space. Still another is its quick drying feature due to the super strong Dacron filler thread, combined with the double jacket of cotton warp thread surrounds non-porous rubber tube.

Our Delaware-Victor brand is rated for 600 pounds and our Bond-Battleship brand for 400 pounds. Both are factory tested under severe hydrostatic pressures far more rugged than the most severe use they would get in action.

We also manufacture a complete line of water and chemical fire hose for every municipal and industrial requirement. Write for free folder and name of nearest distributor equipped to serve you locally.

DIVISIONS OF HKP H. K. PORTER COMPANY, INC.

QUAKER RUBBER CORPORATION
Philadelphia 24, Pennsylvania

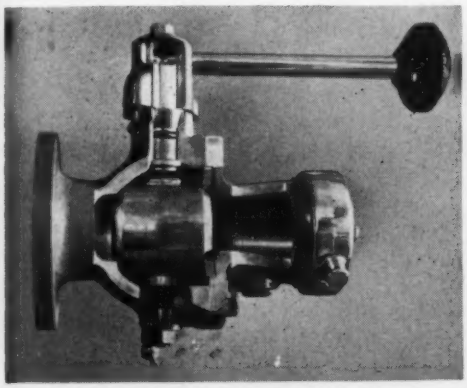
QUAKER PIONEER RUBBER MILLS
San Francisco 7, California

Completely Modern . . .

HALE QL and QL-75 Series of 2-Stage Centrifugal Pumps

Features . . .

- Panel Mounted Relief Valve Control
- Dual Priming Control (Push-button and Manual)
- Dual Pressure-Volume Control (Push-button and Manual) with Visual Indicator
- Bronze Forged Ball Discharge Valves
- Low Over-all height provides substantially more room for tank, compartments, or hose space
- Quality-built for rugged, reliable service



Bronze Forged Ball Discharge Valve

Above is cut-away view of popular Hale Ball Type Discharge Valve. This bronze-forged Valve is now furnished on all new Hale pumps and is available in 2½" size on all Hale Fire Pumps regardless of age.

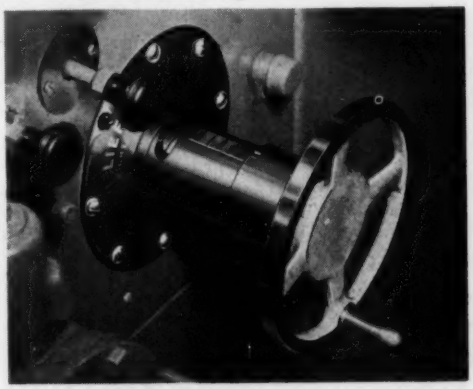
VALUABLE TIME SAVED . . .

While we have always emphasized *Reliability* of priming rather than *Speed* of priming, we cannot help taking pride in the results obtained in the test shown in this picture. PRIMING TIME (Water out the Nozzle) WAS BETTER THAN 18 SECONDS FOR THIS HALE QL PUMP ON A 22 FOOT LIFT! This was done at reasonable Engine speed in both series and parallel.

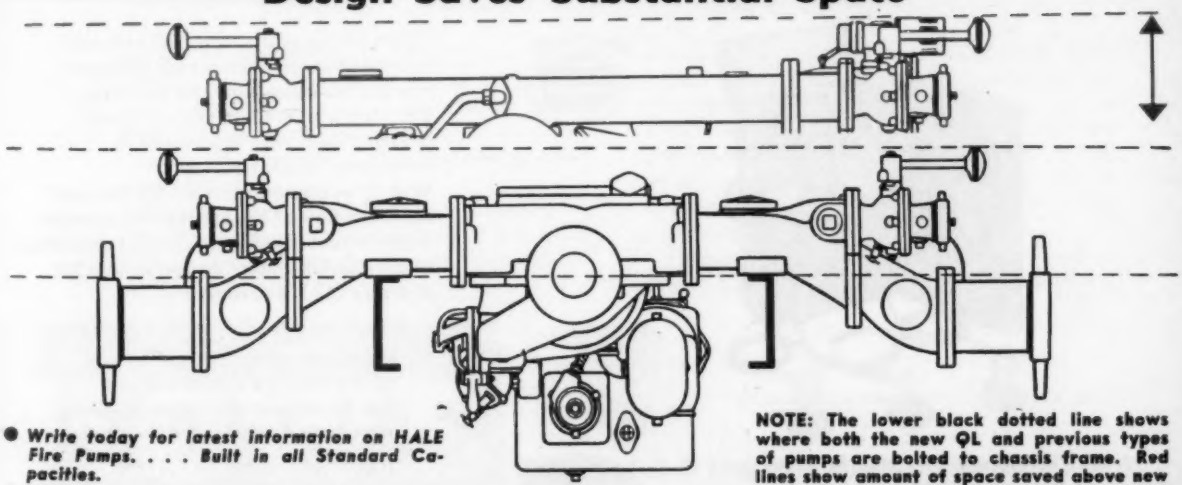
Minimum specifications require priming on a 10 ft. lift in 30 seconds. A substantial reserve on all HALE products is a consistent HALE policy.

HANDY RELIEF VALVE CONTROL

Picture at right shows Relief Valve Control and handy Setting Wheel installed on instrument panel. This type of control is now used on all Hale major pumps.



Design Saves Substantial Space



● *Write today for latest information on HALE Fire Pumps. . . . Built in all Standard Capacities.*

NOTE: The lower black dotted line shows where both the new QL and previous types of pumps are bolted to chassis frame. Red lines show amount of space saved above new pump over other typical present day pumps in the same range as the QL.

HALE FIRE PUMP COMPANY

CONSHOHOCKEN, PA.

SQUEEZES PAST OBSTRUCTIONS

E & J RESUSCITATOR - INHALATOR - ASPIRATOR

E&J RESUSCITATOR • ASPIRATOR • INHALATOR
... first name in Resuscitators

ACCEPTED — COUNCIL ON PHYSICAL MEDICINE and REHABILITATION — AMERICAN MEDICAL ASSOCIATION

When partial obstructions will not yield to aspiration, or when the air passages are swollen almost shut, the exclusive E & J feature "Precision Flow Control" assumes life-saving importance in emergency rescue treatment.
With it the operator can quickly find just the exact flow of oxygen that will squeeze past obstructions short of complete blockage to provide full inhalation and exhalation *at a slow but life-saving rate!*

FIND OUT MORE ABOUT THIS VITAL E & J FEATURE...
Data and demonstration without obligation.
Write to Dept. 544-7 at address below.

E&J

E & J MANUFACTURING COMPANY
100 E. Graham Place, Burbank, California

'WAY UP

GOES THE EFFICIENCY RATING...

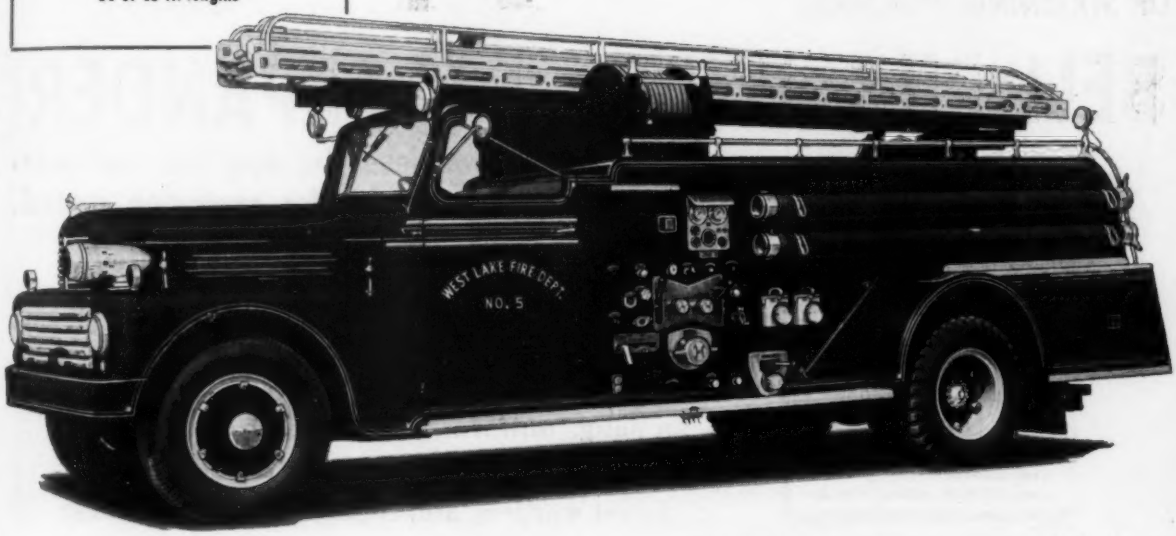
when it's a

HOWE PUMPER

equipped with

Junior Aerial Ladder

Electrically Operated Ladder
Manual Controls for Emergency Use
50 or 65 ft. lengths



HOWE PUMPERS equipped with junior aerial ladders are wise investments. For use as a water tower to mount a deluge nozzle and for rescue work, the sturdy junior aerial ladder is the answer to many an otherwise baffling problem in small communities.

The progressive West Lake Fire Department, Erie, Pennsylvania, (which ordered its first truck from HOWE upon the department's organization in 1937), owns the new pumper shown—a custom-built Howe DEFENDER with 260 H.P. Waukesha engine. The ladder can be operated at the same time as the 750 GPM pump. Alternator is a 100 ampere Leece-Neville unit with 250 watt transformer and two 110 volt outlets. A 200 gallon booster tank and ample running board compartments are among the features. Note the compact overall assembly of this pumper.

Here is a fire truck engineered for efficiency. Before YOU buy . . . phone, write or wire HOWE!

HOWE

Member FAM (Fire Apparatus Manufacturers Association)

HOWE

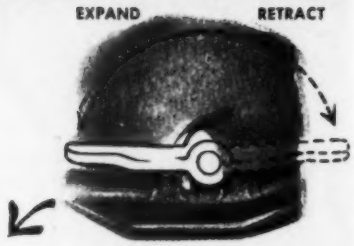
"dependable fire apparatus since 1872"

FIRE APPARATUS COMPANY

Dept. FE9, 1400 W. 22nd St., Anderson, Ind., U. S. A.

FIRE HOSE FOR ATTACHING BRASS EXPANSION RING COUPLINGS

Safety



NO HARD PULLING, PUSHING, OR STRAINING WITH THE

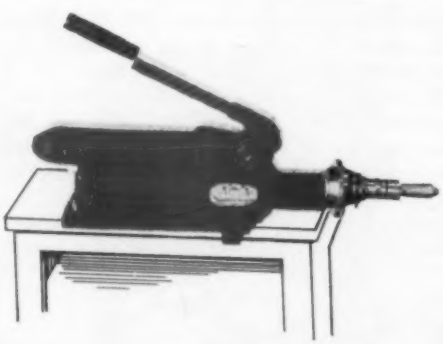
BELL-PIHL HYDRAULIC EXPANDER

Portable model for forestry, conservation and fire warden use. With or without tripod.

with expand and retract lever for easy use and automatic pressure regulator valve for expansion control.

Uses hand operated, smooth flow hydraulic pressure to expand brass expansion rings to fire hose. Same easy action withdraws mandrel after expansion. Makes every attachment a snug, uniform, secure fit, protecting couplings, hose and operator. Used by firemen, forest wardens and industry, it is the newest power tool for easy expanding of brass expansion ring couplings.

For demonstration, literature and other information see your local jobber or write:



Suitable for forestry and fire protection uses, the Bell-Pihl Hydraulic Expander is the modern, scientific method of attaching brass expansion ring couplings. Made for bench use, for field use with tripod or available with floor stand.

BELL-PIHL COMPANY

17 WYMAN ST., ARLINGTON 74, MASS.

Manufacturers of brass expansion rings for fire hose.

Telephone Arlington, Mass., MIssion 3-6933

SPECIFICATIONS:

used for attaching brass expansion ring couplings in sizes:

¾" — 1" — 1¼" — 1½" — 2" — 2½" — 3"

FIRST *in fire fighting*

Strong, Swift, Sure,
Precision Built
Underwriters' Approved
Competitively Priced

THE RUGGED STRENGTH of these great Fire Fighting Reels is more than a match for the most severe service to which they can be subjected.

FRAMES are of channel steel, end-welded and angle-braced—extra strong, yet flexible enough to absorb road shocks.

DRUMS are of heavy 11-gauge steel, smooth-seamed and arc-welded for perfect roundness, and reinforced with a series of heavy steel rods.

HIGH PRESSURE SWING JOINTS and piping will withstand pressures in excess of 1,000 pounds. Standard swing joints and piping will withstand pressures up to 1,000 pounds.

GEAR-TO-GEAR DRIVE assures smooth, positive power transmission—eliminates adjustment and alignment problems of chain drives.

EXPLOSION PROOF MOTORS are of exclusive design — compact, powerful, efficient — Underwriters' Approved for all electrical systems.

ALSO DUAL-REEL, starter-motor, and hand-wind models — with or without hose rollers. Distributors in principal cities. Complete catalog on request. Write, wire or phone.

ardmore products
Division of Amco Corporation

FIRE PROTECTION NEWS

NO. 1 IN A SERIES, PUBLISHED BY GRINNELL COMPANY, INC., PROVIDENCE, R. I.

Fire Razes Factory

Flames leveled two factories and several other buildings, despite valiant efforts of firemen to check the blaze. Damage was estimated in the hundreds of thousands of dollars. Several people were seriously injured. Another case of the high cost of NO SPRINKLERS.

313 Fires Cause $202 Millions of Damage

Last year hit a new, all-time high for "large loss" fires, those that exceed $250,000. A total of 313 big fires were reported in the United States and Canada. Most of the increase in the number of fires occurred in the mercantile classification, which jumped from 29 fires in 1953 to 54 last year. Warehouse and other storage areas rose from 48 to 54 and the transportation section climbed from 39 to 57. In commenting on the large fire loss, National Fire Protection Association said: — "Most of the large loss building fires in 1954 would not have occurred had the buildings been completely protected by a properly installed and maintained sprinkler system. The value of a complete sprinkler system is certainly obvious."

Chemical Plant at Height of the Fire

This is the way the Arnold Hoffman Chemical Plant in Dighton, Mass. looked while a fire "raged" inside. The fire, however, never amounted to much, because a Grinnell Automatic Sprinkler System went into operation, snuffing out the fire instantly. Damage was negligible and no one was injured.

FIRE PROTECTION IS GOOD BUSINESS

E. J. Meyers, Assistant Manager, Safety and Fire Protection Division, E. I. du Pont de Nemours & Company, gives his formula for safe plant design

Speaking before the Massachusetts Institute of Technology's Conference on Fire Protection Engineering, Mr. Meyers expressed some basic facts which deserve a wider audience. Excerpts from this speech follow:

"Fire protection has always been an important part of good business . . . fire protection begins with the design of the plant — buildings, equipment and processes. The object is to remove, as far as possible, the human factor by making protection permanent or automatic.

". . . In the minds of many, fire prevention and fire protection are confined largely to care in preventing or safe-guarding the common causes of fire, such as the use of matches, smoking, spontaneous combustion of oily rags, and of defects existing in lighting. To be effective, however, every factor affecting safety to either life or property must be included.

". . . The automatic sprinkler system is undoubtedly the most extensively used fire protection device. This is mainly due to the fact that it is automatic in action and always on the job in any part of the property equipped, provided it is properly installed and maintained. It prevents destruction of property, interruption to operations, and the loss of lives. A majority of fires are small at the start and can usually be put out with a small amount of water. The sprinkler automatically supplies this water at the needed time without the aid of human agency, provided it is a standard installation properly maintained and backed up with adequate water."

GRINNELL PROTECTOSPRAY SYSTEM COOLS OFF LP-GAS TANK CAR

This tank car full of liquefied petroleum gas is at a siding where its contents will be transferred to industrial storage tanks. The Grinnell ProtectoSpray System, in test operation, is a modern fire-prevention and fire-control water spray system.

Without such protection any leak brings the chance of fire or explosion. With the Grinnell ProtectoSpray System, the hazard is practically eliminated. The drenching water blanket provides instant cooling, to reduce tank pressures and prevent rupture. Positive air turbulence is created, even in still air, to help dilution of leaking gas by the inert gases present in air. Water-vapor dilution assists in thinning out gas-air mixtures toward the point where they will no longer burn. And fire, if it occurs, is localized, permitting safe disposal of the gas by burning where it escapes, thus reducing the fire-explosion hazards downwind or downgrade.

Grinnell ProtectoSpray is just one of the many systems engineered to protect special hazards. Water spray, air foam, carbon dioxide, and dry powder systems are available to protect all classes of hazards.

Look TO SHARPSVILLE FOR THE ULTIMATE IN FIRE-FIGHTING APPARATUS, *Custom made* TO YOUR SPECIFICATIONS

Custom Challenger

Challenger Deluxe

High-Pressure Challenger

Challenger Tanker (Model R)

Emergency Car

Closed Squad Car

Semi-Closed Rescue Truck

Sharpsville

STEEL FABRICATORS, Inc.

SHARPSVILLE, PA.

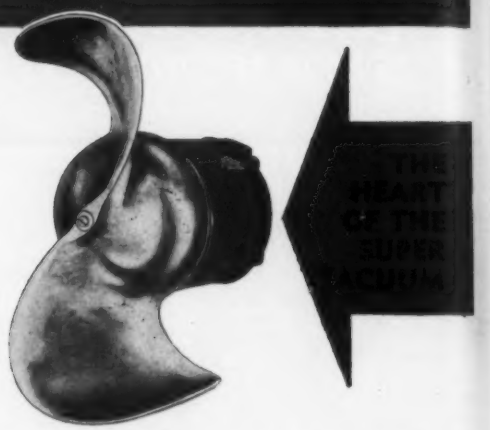
★

BUILDERS OF SERVICE, CRASH AND LADDER TRUCKS
VOLUME AND HIGH-PRESSURE PUMPERS
SQUAD AND EMERGENCY CARS • STORAGE TANKS

Challenger Tanker (Model C)

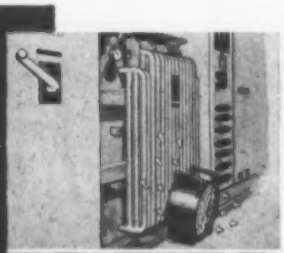
Super Vacuum

The Super Vacuum Smoke ejector is a powerful portable fan unit designed especially for fire departments. This design is a new and revolutionary principle in moving air. Several thousand Super Vacuum Smoke ejectors are in use throughout the United States and Canada. Controlled ventilation is new and very necessary in fire fighting. Years of service and satisfied users are your best guarantee for any merchandise.



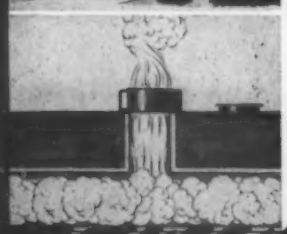
The secret of Super Vacuum is the patented fan blade. Conventional fans chop the air and push it back. Whereas the Super Vacuum fan blade is a perfect spiral air screw which creates a partial vacuum, suction is created over the entire face of the blade and the air or smoke is discharged in a high velocity spiral. There are no dead spots—that is why Super Vacuum outperforms other fans twice its size.

TYPICAL USES

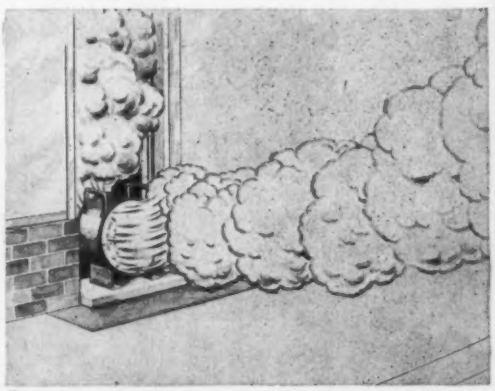


Super Vacuum ejectors are often used by fire departments in emergencies to cool generators, pumps and motors. The strong discharge of air quickly reduces the temperature to a safe level.

Fresh air can be forced into a building with or without a deodorant. By applying deodorant to a pad and attaching it to the intake face of the Super Vacuum fan, air is pulled through this pad and forced throughout the building. Smoke odors are dissipated and soot is settled.



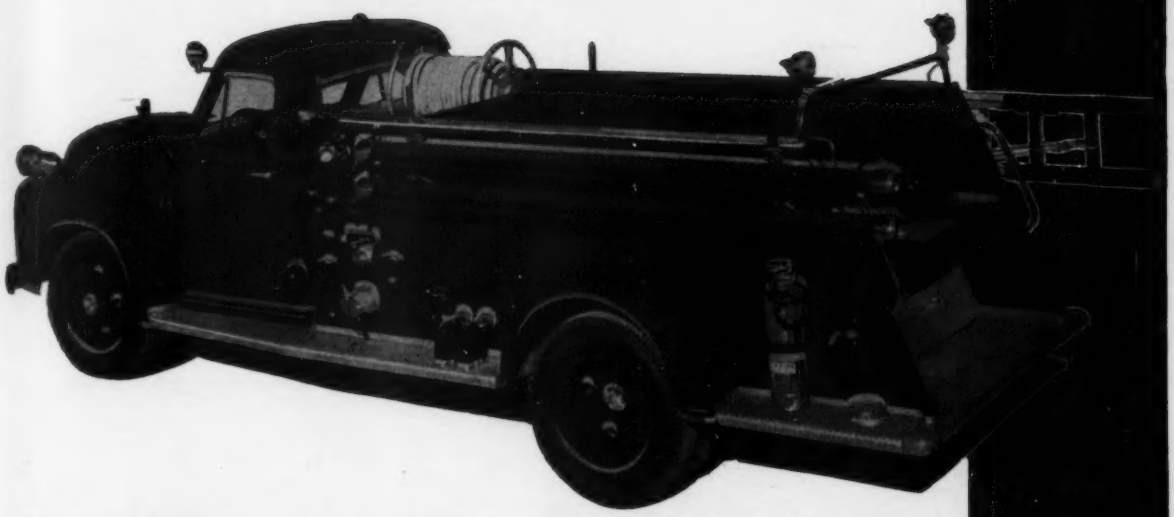
Poisonous or explosive gases can be effectively removed from sewers, basements, tunnels and mine shafts with the Super Vacuum Fans. They can be used in any position horizontal or vertic



Smoke ejection is a major problem at most fires. Super Vacuum does it faster, cheaper and more efficiently than any similar device on the market. As a Nationally known Fire Chief said recently, "Smoke ejectors are as necessary as fire hose in

Super Vacuum MANUFACTURING CO., INC.

SO MUCH PUMPER . . .



FOR SO LITTLE MONEY!

The equipment your department has must be the most dependable fire fighter made today. Your community demands it!

Boardman meets this challenge with a pumper that is designed for years of trouble-free, dependable service. This dependability is proven by the hundreds of departments now operating Boardman equipment from coast to coast, and beyond.

And Boardman pumpers are economical because they are built around the standard chassis of your choice. Here is low initial cost, coupled with economy of operation and maintenance.

Write TODAY for free literature and the amazingly low price.

THE BOARDMAN CO.
OKLAHOMA CITY
1401 S.W. 11TH
BRANCH OFFICE: TULSA, OKLAHOMA

A few choice dealer territories available!

CHAMPION FIRE APPARATUS

1955 Ford — 750 GALLON PUMPER — For City or Rural Service

ALL CHAMPIONS ARE BUILT TO THE SAME HIGH STANDARDS OF ENGINEERING

The beautiful Champion Fire Apparatus, illustrated above, is an unbeatable value in a 750 gallon Class A pumper which conforms to all specifications of the National Board of Fire Underwriters and all State Insurance Bureaus. Delivers 750 gallons per minute at 150 lbs. pressure, 525 GPM at 200 lbs., 375 GPM at 250 lbs. to meet all requirements for Class A Underwriter rating, the highest rating given to any pumper, no matter whether you pay 25% to 50% more than our low price.

PUMP—The Darley Champion Fire Pump, manufactured exclusively by W. S. Darley & Co., is the Type SH750, 3 stage centrifugal, which delivers, in addition to Underwriter performance, pressures up to 1000 lbs. for high pressure fog fire fighting. You get everything you'll ever need in fire fighting efficiency when you get a Champion Pumper. And if it's big volume you want this SH750 will actually deliver 900 gallons per minute pumping water from a river or lake and 1350 GPM pumping from a hydrant which has average good flowing pressure.

You can select any commercial chassis with engine capable of delivering 160 horsepower or more.

A few Territories open for Sales Representatives. Write us.

Write for Fire Apparatus Booklet

AT YOUR SERVICE: Sales and Service Representatives — East, Midwest, North, South

ESTABLISHED 1908

High Pressure Fog Pumps

W. S. DARLEY & CO., Chicago 12

Front and Midship Pumps

Factories — Chicago and Chippewa Falls, Wis.

...our 63rd year

The HOME of POWHATAN BRASS

Here at Ranson, our modern plant is turning out the finest brass goods available for the fire service. Our desire is to continue to supply our customers with items of the best quality and serviceability. Your orders and inquiries are always appreciated and will receive our prompt attention. If you do not have one, send for our complete new catalog "A".

"SENSIBLE SUE" COUPLING

QUARTER-TURN SHUT-OFF SIAMESE

POWHATAN BRASS and IRON WORKS
RANSON, WEST VIRGINIA
Phones 93 & 94 Charles Town, West Virginia
Established 1892

"IT ALL COMES OUT IN THE WASH"

See Our Complete Line of

HOSE CONDITIONING EQUIPMENT

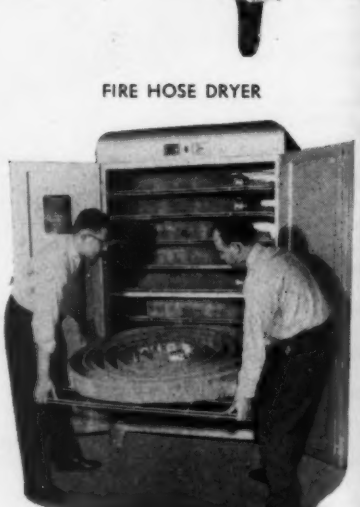
CIRCUL-AIR Roto-Jet

FIRE HOSE WASHER

IT WASHES
RINSES
DRAINS

- **HOSE IS SELF PROPELLED**—Just a slight hand pressure on hose as it passes through wringer rolls pulls it through on its own power.
- **UNIFORM WASHING**—The Roto-Jet assures you of even, uniform cleaning—at a rate of 20 ft. per minute.
- **WASHES EDGES, TOO**—The hose imbeds itself in the soft, staggered Nylon brushes, which scrub both edges and flat surfaces.
- **DRAINS HOSE LININGS**—"Squeegee" action of neoprene wringer rolls eliminates all need to hang or "walk" hose before drying.

FIRE HOSE DRYER



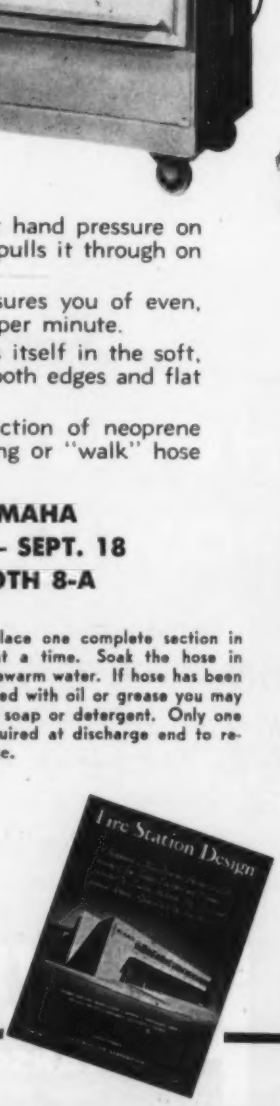
SEE IT DEMONSTRATED AT OMAHA
IAFC — SEPT. 18
BOOTH 8-A

A—Z FIRE HOSE WASHER
Roto-Tables Sold Separately

You can place one complete section in the tank at a time. Soak the hose in cold or lukewarm water. If hose has been contaminated with oil or grease you may use a little soap or detergent. Only one man is required at discharge end to re-roll the hose.

Write for Catalog

THE CIRCUL-AIR CORPORATION



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ACCEPTED . APPROVED . RECOMMENDED

Accepted as the preferred drying medium in most of America's largest fire departments . . .

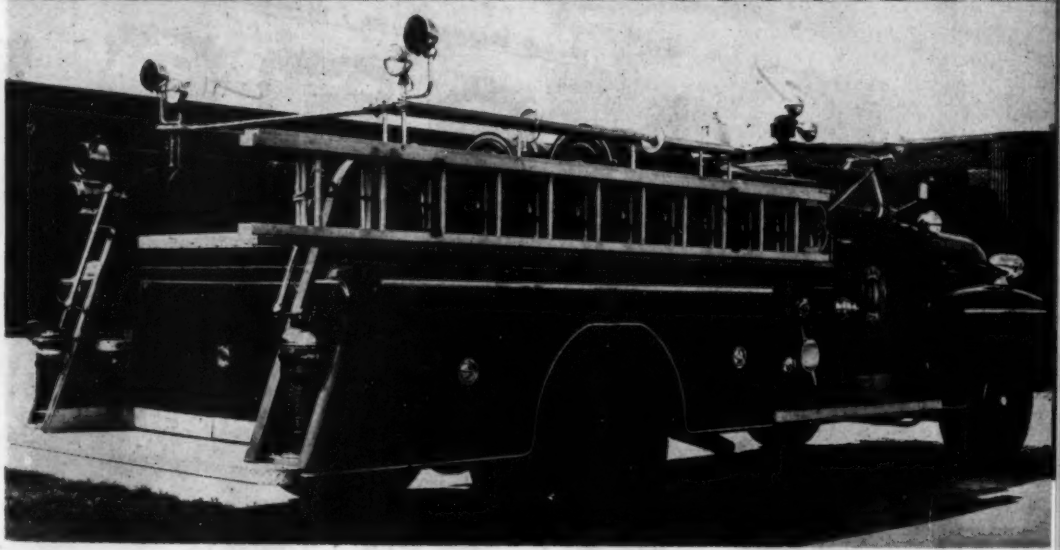
575 EAST MILWAUKEE
DETROIT 2, MICHIGAN

Ahrens-Fox FIRE APPARATUS By BECK

RECENT DELIVERIES

- *New Milford, New Jersey
- Silverton, Ohio
- Harrison, N. J.
- North College Hill, Ohio
- Wanaque, New Jersey
- Cumberland, Maryland
- Salt Lake City, Utah
- Paramus, New Jersey
- Lester, Pennsylvania
- Port Chester, New York
- Clifton Heights, Pennsylvania
- Mount Prospect, Illinois
- Lakeworth, Texas
- Crescent Springs, Kentucky
- Melbourne Kentucky
- Northern Hills, Ohio
- Johnson-St. Paris, Ohio
- *Union Carbide & Carbon Chemical Co., West Virginia
- River Edge, New Jersey
- *Bristol, Pennsylvania
- South Fayette, Pennsylvania
- *Saddle River Twp., New Jersey
- East Rutherford, New Jersey
- Oakhurst, New Jersey

* Two units each



C. D. Beck & Company, Inc., who has manufactured quality coaches for over 25 years, is now the sole producer of Ahrens-Fox Fire Apparatus — years recognized as the quality standard bearer of fire fighting equipment.

All of the production and engineering (know-how) of C. D. Beck & Company, Inc., gained through years of practical experience, is now utilized to manufacture a complete line of custom and commercial pumpers, consistent with the highest standard of Quality.

The same manufacturing organization that builds this $50,000.00 DECK AND HALF coach will produce Ahrens-Fox Fire Apparatus.

SALES REPRESENTATIVES wanted to represent us in this field.

Write, wire or phone for complete detailed specifications and quotations on your fire equipment needs.

C. D. BECK & COMPANY, INC., SIDNEY, OHIO, U.S.A.

our New Catalog is yours

It contains a wonderful collection of the finest badges we have made in our 75 years. It's yours for the asking — every fire company — every equipment dealer should have it. Please write on your company stationery —

BRAXMAR

OUR DIAMOND JUBILEE CATALOG

BADGES

THE C. G. BRAXMAR Co., Inc. • 216 East 45th Street New York 17, N.Y.

John O. Veit, President
John O. Veit, Jr., Sec. & Treas.

The C. G. BRAXMAR CO., INC.
216 East 45th St. New York 17, N. Y.

PRODUCED BY THE VERSATILE, ADAPTABLE, EFFICIENT HIGH FOG CENTRIFUGAL PUMP

This pump which delivers pressures to 1000 PSI, weighs only 210 pounds. There's nothing like it in fire fighting equipment. High Fog Pump installs on any chassis and power take-off is made from the transmission. It is recommended for installation on new or existing equipment.

MAIL THIS PREPAID POST CARD TODAY FOR COMPLETE DETAILS.

Please send me complete details on the High Fog Pump.

NAME _____

TITLE _____

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CITY _____ STATE _____

THIS IS THE HIGH FOG PUMP

The High Fog Pump is a high pressure, 4-stage centrifugal pump capable of delivering pressures up to 1000 PSI with water delivery from 120 GPM to 55 GPM. It is extremely light weight (210 lbs) and measures 26" in length with a diameter of 9½". The Pump is supplied for either opposite-engine or engine rotation. It is designed and built to the highest specifications. The main case of the Pump is made of nickel alloy iron which gives an extremely high tensile strength casting and has corrosion resistance equal to that of any other metal. Impellers are bronze on a stainless steel shaft.

This is the new, modern way to fight fire—with High Fog!

The High Fog Pump is the most advanced high pressure pump in both performance and design. It actually delivers 1000 PSI pressure with water delivery of only 55 GPM, minimizing water damage and usage.

FIRST CLASS
PERMIT NO. 33280
(Sec. 94)
Los Angeles, Calif.

BUSINESS REPLY CARD

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

3c-POSTAGE WILL BE PAID BY—

ASSOCIATED FIRE EQUIPMENT COMPANY
1915 S. SAN PEDRO
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MAIL THIS PREPAID
POST CARD TODAY
FOR COMPLETE DETAILS.

ASSOCIATED FIRE EQUIPMENT CO.
1915 S. San Pedro St., Los Angeles 11, Calif.

"THAT SETTLES IT! TOMORROW WE ORDER HEWITT-ROBINS DACRON FILLER FIRE HOSE*!"

* Hewitt-Robins manufactures all types of Municipal and Industrial Fire Hose.

Hewitt-Robins HR

HEWITT-ROBINS INCORPORATED · STAMFORD, CONNECTICUT

DESIGNED FROM THE FIREMAN'S POINT OF VIEW!

In a *Dragon* Fire Pump you'll find features firefighters always have wanted... features that boost efficiency and reduce fatigue.

Even the Dragon harness is specially designed. The fireman easily swings the pump into place. And it rides high on his back where it can't throw him off balance or interfere with walking or climbing. He gets a *continuous* flow of water with just a few strokes of the pump lever. And he can direct that water right where it will do the most good—in a solid stream or spray which he selects *instantly* with a mere twist of the shut-off nozzle. No more fumbling with separate nozzle tips to change the type of stream.

What's more, the firefighter can have both hands free when he has to use shovel, rake, or other tool. He just lets go the pump lever and shut-off nozzle—the pump always is ready for instant action when he needs it again.

A Dragon Fire Pump comes completely assembled and requires little maintenance. There is no pump packing to dry out: even after standing idle for long periods, the pump is ready for instant use.

UP... OUT... READY FOR ACTION!

PARCO PRODUCTS COMPANY

PENNSBURG, PENNSYLVANIA

Dragon **FIRE PUMPS**

now available in 2 models

No. 150-S—Stainless Steel Tank

No. 150-G — Galvanized Tank: Cold-rolled steel, hot-dipped galvanized after fabrication.

All units equipped with brass pumps; all tanks seam welded. Capacity 5 gallons

DRAGON FIRE PUMPS meet Underwriters' Laboratories requirements and can be supplied with the UL label of inspection attached.

VALUABLE DISTRIBUTORSHIPS AVAILABLE, WRITE TODAY.

New Reference Guide for Purchasers of Fire Fighting Equipment

This FREE 12-page booklet

makes it easier for you to select the right equipment and save money, too!

index

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Guide for the Selection of Dependable Ford Fire Trucks	2 & 3
Pumpers, Tankers, Hose Trucks—Backbone of Fire Fighting Equipment	4 & 5
Pump and Tank Installations	6
Basic Fire Pump Principles	6
What to Look for in a Fire Truck Chassis	7
Five Ultra-Modern Engines for Dependable Pumping Operations	8 & 9
N. B. F. U. Class A Pump Specifications and Horsepower Requirements	10 & 11

How do you figure pump power requirements? What size engine do you need for a given type and capacity of pump?

You'll find quick answers to these and other important questions in this handy booklet. As indicated by the partial index at left, its 12 pages are *packed* with useful information.

This booklet has been prepared by the Ford Division of Ford Motor Company to assist you in selecting the proper equipment for your fire fighting needs. Among other things, it shows various types of fire trucks built on Ford chassis . . . and which Ford engines are recommended for different size pumps to meet N.F.P.A. and N.B.F.U. Class A standards.

Send for your free copy now. Read it, and keep it handy for reference. It can be of real value in helping you select modern equipment tailored to your specific requirements—and at low-budget cost, too!

MAIL THIS COUPON TODAY!

FREE **FORD Division of FORD MOTOR CO.**
P. O. Box 638, Dearborn, Michigan

Please send me your free 12-page booklet
"How to select the right Fire Engine and Equipment."

NAME_____

ADDRESS_____

CITY_____ STATE_____

F-1 Check here if student ☐

MIDWESTERN

Safety Clothing for FIREMEN

The Original
STRIPED SAFETY COAT

- Greater Visibility
- Exclusive Safety Features
- Exclusive Fabric Material
- Superior Design

The striped safety coat for firemen is an *original* MIDWESTERN development . . . featuring highly visible yellow stripes which are *rubberized as part of the material* . . . not painted, glued or sewed on!

Service records prove that Midwestern Striped Safety Coats withstand years of rugged duty . . . offer high safety visibility during the entire life of the garment. Designed exclusively for firemen . . . every detail in construction adds to the service, comfort, protection and long wear of the garment.

As an accident prevention measure, more and more fire departments are specifying Midwestern Striped Safety Coats as standard equipment. There are many imitations but *no substitute* for the workmanship, built-in comfort and longer wear you receive by specifying MIDWESTERN.

MIDWESTERN COMBINATION SAFETY SUIT

The Midwestern Safety Coat and Bunker Pants combination is preferred by many larger municipal departments. Detachable wool linings. Close fitting collar and elastic inner sleeve on coat keep out sparks and water. Pants have double-stitched seams, reinforcing rivets at points of strain, large, roomy pocket space.

QUALITY UNEXCELLED

In our vast selection of materials you will find the type of fabric exactly suited to your climate and needs. For complete information, have your Midwestern dealer show you our complete line. A letter to the factory will also bring you literature and material samples for your inspection.

NONE GENUINE WITHOUT THIS TRADE MARK

MIDWESTERN SAFETY MFG. CO. Mackinaw, Illinois

Manufacturers of the Famous **MACKINAW Safety Coats**

Superior Ambulance features 22½-inch loading height, full 42-inch headroom. Shown in Modern body style; also available in Limousine and Landaulet styl-ngs.

Superior Super Rescuer for demanding emergency work. 51-inch headroom accommodates four patients, allows ample work room. Available in all three body styles.

No other rescue car...

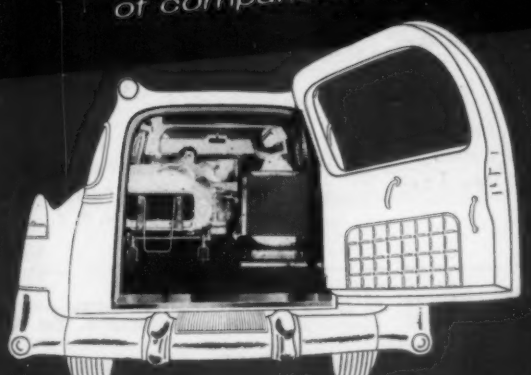
. . . no other ambulance gives you the safety, the efficiency, the crisp, responsive performance of your new Superior.

No other emergency car gives you Superior's low 22½-inch loading height, high headroom, extra wide door openings or spacious, efficiency-equipped interior.

That's why Superior's carefully-designed Ambulance, Rescuer and high-headroom Super Rescuer—all mounted on Cadillac chassis—are identified by rescue squads all over America as the easiest to drive, easiest to load, easiest to use of all coaches on the road.

Your first critical examination of a Superior emergency car will show you why. Make that examination today.

SUPERIOR
by every standard of comparison



Super-Rescuer, equipped for action differs from Rescuer only in headroom. Comfortable Fold-N-Floor seats provide plenty of leg-room for attendants.

SUPERIOR COACH CORPORATION • LIMA, OHIO

Body by Superior . . .
Chassis by Cadillac

Pictured left to right — Edward A. Fitzgerald, Mayor; John J. Givney, Commissioner; Lawrence J. Collins, Controller; Carl A. Smith, Chief; Gus G. Jacobs, Ward LaFrance upstate New York representative.

5 new WARD LaFRANCE trucks guard Troy, N. Y.

In Troy, steep hills call for powerful engines to move apparatus speedily to fires. In addition, large factories in Troy's industrial section require dependable, high pressure extinguishing systems in case of a conflagration. These are just two of the many reasons why Troy city officials selected four Ward LaFrance 1000 GPM pumpers and one squad and rescue truck with lights and booster equipment.

There is a Ward LaFrance truck that will meet your community's requirements. Ask to have the representative in your area tell you about the many advantages of Ward LaFrance fire engineered equipment.

"These Ward LaFrance trucks were purchased for protecting our city because they are specially designed for fire fighting from the ground up. They have ample pumping capacities, plenty of power for climbing the steep hills of Troy and we know that they will stand up if called upon for heavy duty in our industrial area."

Carl A. Smith

Carl A. Smith
City of Troy, Bureau of Fire

Upstate New York Agent:
Gus G. Jacobs, District Manager
White Plains, N. Y.

WARD LaFRANCE
TRUCK CORPORATION
Fire Apparatus Manufacturers for over 37 Years

GENERAL OFFICE & FACTORY: Grand Central Avenue
Elmira, N.Y. Tel. 3-5631

DIRECT FACTORY BRANCH: 139th Street & Bruckner Blvd.,
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Tel. CYpress 2-3300

EXPORT: Ward LaFrance International, Inc.,
Elmira, N.Y., U.S.A.
Cable Address: "Wardtruck"

completely new design!

PYLE SIRENS

MODEL "7"

- MORE POWERFUL
- LESS CURRENT
- LIGHTER WEIGHT
- SMALLER SIZE

FOR BULLETIN No. 622 . . . SEND THIS COUPON!

SINCE 1897

THE PYLE-NATIONAL COMPANY

WHERE QUALITY IS TRADITIONAL

1365 North Kostner Avenue, Chicago 51, Illinois

THE PYLE-NATIONAL COMPANY
1365 North Kostner Avenue, Chicago 51, Illinois

Please send me full details on Pyle, Model "7" Siren.

NAME_____

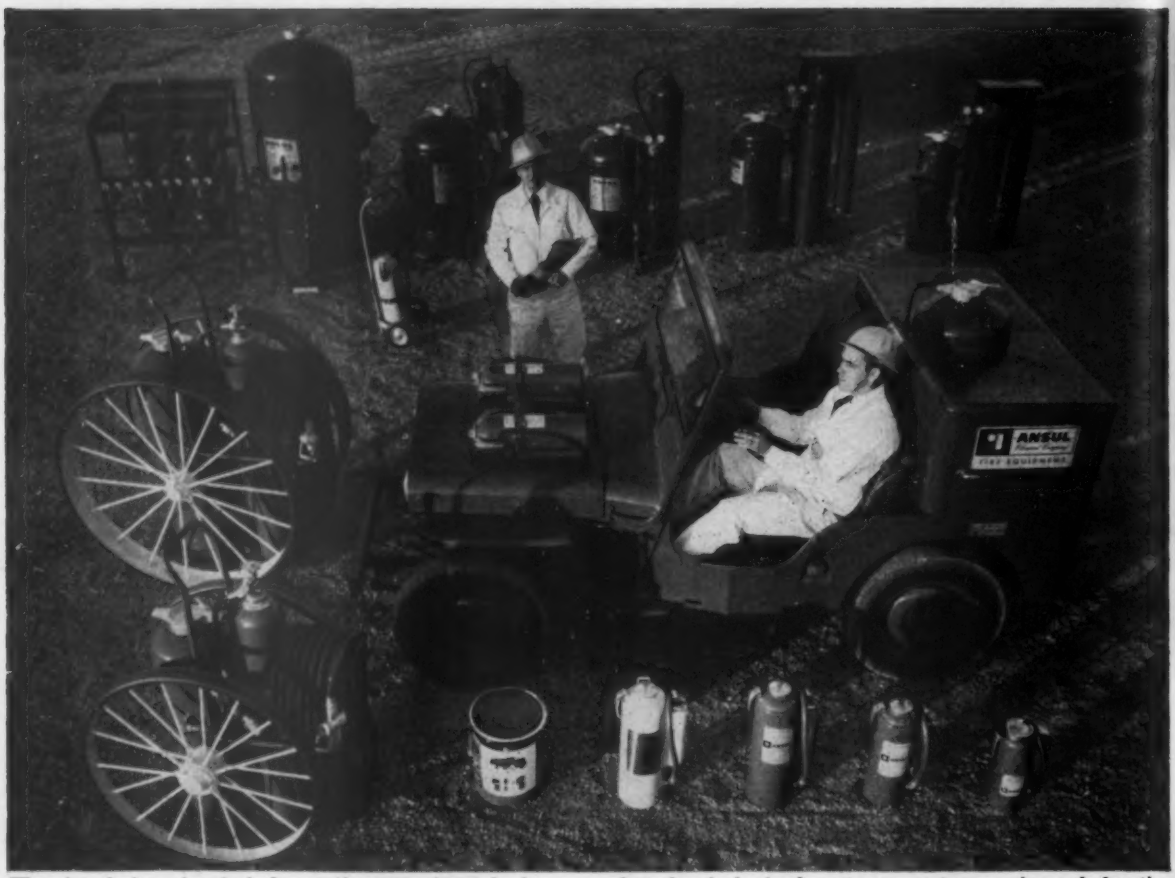
TITLE_____

DEPARTMENT_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

TRAFFIC SEPARATOR LIGHTS • SUBWAY AND PIT LIGHTS • WARNING LIGHTS • FLOODLIGHTS • VAPORTIGHT FIXTURES



The Ansul dry chemical fire equipment pictured above includes portable hand units, wheeled and stationary units and a jeep installation. Ansul also manufactures automatic dry chemical piped systems, custom engineered for the hazard. Ansul equipment is listed and approved by Underwriters' and Factory Mutual Laboratories.

Only Ansul offers a Five Year Equipment Warranty

Your assurance of fast, dependable fire protection

For you, the buyer of fire equipment, Ansul's important 5 year warranty means many extra years of fast, dependable protection. It also means freedom from costly maintenance checks and repairs.

Special design and construction features make this warranty possible. Ansul's *weather-tight* construction keeps out moisture, resists corrosion. *Patented nozzles* deliver the right kind of stream for your hazard. A *sealed pressure cartridge* puts Ansul's "Plus Fifty" dry chemical to work immediately—no delay or lag. Finally, *rugged construction* makes it possible for Ansul equipment to give peak performance under the toughest operating conditions.

Call the Ansul Man!

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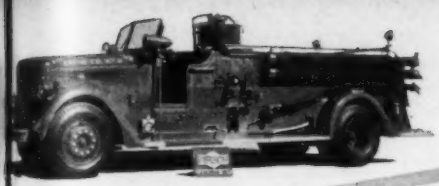

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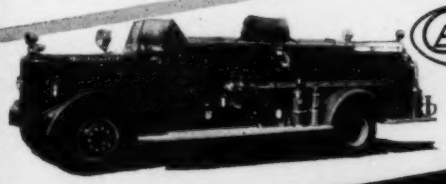

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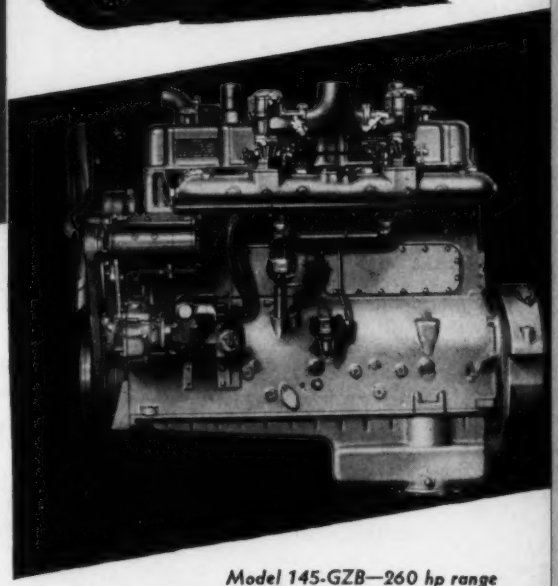

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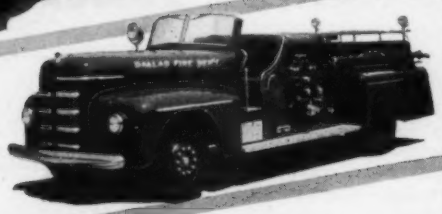

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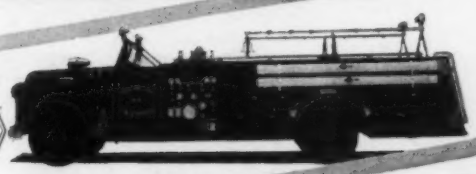

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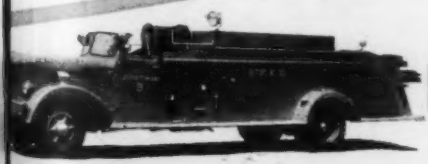

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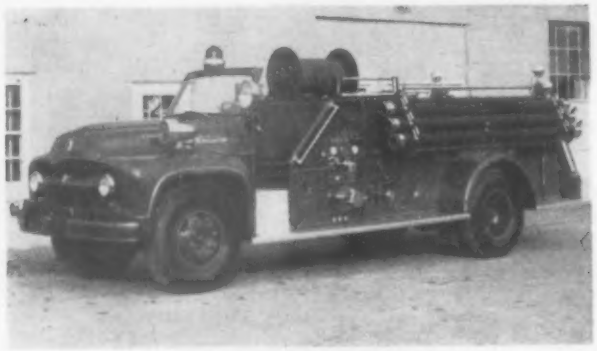

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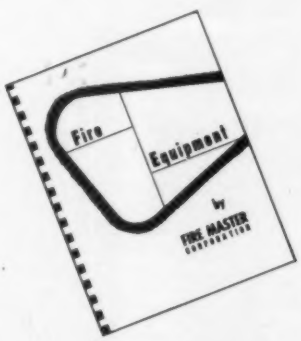

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FIRE ENGINEERING

SEPTEMBER, 1955 VOL. 108, NO. 9

With the Editor

An Accounting of Stewardship

The advent of the yearly Conference of the International Association of Fire Chiefs marks a good time to pause a moment in our hectic pace and to review in retrospect the progress made by the fire service since the last Conference, and the opportunities for advancement that lie ahead.

The I. A. F. C. gathering in Omaha will, this year, as it has for nearly 80 years, picture that progress, just as does this issue of FIRE ENGINEERING, and those Conference numbers that have gone before it in our past three-quarters of a century.

All told, the record is an encouraging one. Certainly, despite handicaps, the fire service can report progress, even though losses in lives and property, due to destructive fire, maintain discouraging trends. But what those losses would be without the progressive effort of the fire service to contain and reduce them staggers the imagination.

Progress is being made in the field of fire prevention, the most outstanding example being the broadening of fire department radio and other inspections. But we have scarcely more than scratched the surface.

In firemanship training, things are looking up. Magnificent new fire colleges, schools and academies, such as we have told about in Rochester, N. Y.; Lewiston, Pa., Towson, Md., and other lesser but nonetheless important county and state installations, bode well for the future. Better still, firemanship and administration of fire departments is receiving the attention of many of our nations' leading educational institutions such as the University of Southern California, Queens College, N. Y., and others. Here's a field for plenty of endeavor, and financial endowment and investment that will pay ever-increasing dividends.

Encouraging, too, are the advancements being made in fire control and extinguishing techniques, as witnessed by the reports in this Journal of the Maryland University fog nozzle tests; the widespread trials of waterfog under actual fire extinguishing conditions; the advancement in the use of dry chemical and wet water.

On the credit side of the ledger, too, is the interest of progressive fire departments in large-scale, heavy duty fire fighting apparatus and equipment, an interest spurred by the threat of enemy attack. FIRE ENGINEERING has chronicled these developments as they have occurred.

Some progress, too, should be noted in our fire department plants. An encouraging number of new fire stations and headquarters are showing what can, and should be done, by others.

In the communications field, the fire service continues to forge ahead in its wireless communications, if not as rapidly as it should in wired systems. This situation gets the headlines herein. We commend for your special attention the report on New York's handling of the false alarm situation.

So much for the credit side of the ledger. On the debit side things aren't so bright.

Perhaps the worst of it can be summed up under failure by civic governments to support the fire service in meeting its needs and wants. This is particularly true in mechanical facilities. It isn't altogether an encouraging message, the analytical survey reported in this issue, in which over 2,500 fire departments reported to us on their existing and needed facilities. There is too much over-age equipment in use, and it is growing older faster than it is being replaced. In a word, the fire service isn't keeping pace with required progress in improving its basic fire fighting resources. This weakness transcends all other failures and should be corrected!

In manpower, particularly among professional fire fighters, the situation threatens our entire fire suppression program. With more men in our fire forces than ever before, we are actually "rolling" fewer men in our initial attacks on fire. This, combined with national obsolescence of mechanical facilities, is the nation's number one threat to our ability to contain and extinguish fire.

There are other serious handicaps, such as the growing traffic hazards that are slowing fire force response; the apathy of architects and builders to the fire menace in planning for and erection of our homes and business structures; the refusal of our legislatures to put "stop-fire" laws on the statutes, and to enforce existing laws. These should all have the serious attention of the fire service, not only in Omaha, but at all other fire service conferences, if we are to show a more creditable accounting a year hence.

Fred Shemwell

44% of Present Apparatus Needs Immediate Replacement

And 12% Additional Is Needed to Protect New-Growth Areas of Cities and Suburban Developments

A STAFF SURVEY

IN order to determine the condition and adequacy of fire apparatus at present in service in this country, FIRE ENGINEERING recently completed a nation-wide survey of fire departments.

Questions asked included the following:

QUESTIONNAIRE

City ..... State .....
Population .....

Pumpers
Number in service .....
Age of units (or year purchased).....
No. ..... Age .....
Capacity:
No. .....
GPM Cap. .....
Number needing replacement .....
Number of additional units needed to bring fire dept. to full strength .....

Triple Combinations
(Pump, booster or chemical tank, hose)
Number in service .....
Age of units (or year purchased):....
No. ..... Age .....
Capacity:
No. .....
GPM Cap. .....
Number needing replacement .....
Number of additional units needed to bring fire dept. to full strength. ....

Quadruple Combinations
(Pump, booster or chemical tank, hose, ladder equipment similar to city service truck)
Number .....
Age of units (or year purchased).....
No. ..... Age .....
No. .....
GPM Cap. .....
Number needing replacement .....
Capacity:
Number of additional units needed to bring fire dept. to full strength. ....

Quintuple Combinations
(Pump, booster or chemical tank, hose, portable ladders and aerial ladder)
Number .....
Age of units (or year purchased).....
No. ..... Age .....
Capacity:
No. .....
GPM Cap. .....
Number needing replacement .....
Number of additional units needed ..

High Pressure Fog Units
Number .....
Capacity of pumps:
No. .....
GPM Cap. .....
Number of additional units needed ..

Hose Wagons
Number .....
Age of units (or year purchased).....
No. ..... Age .....
Number of additional units needed ..
Number needing replacement .....

Aerial Ladder Trucks
Number .....
Age of units (or year purchased).....
No. ..... Age .....
Number needing replacement .....
Number of additional units needed ..

City Service Trucks
Number .....
Age of units (or year purchased).....
No. ..... Age .....
Number needing replacement .....
Number of additional units needed ..

Water Tank Trucks
Number in service with pumps. .....
Number in service without pumps. ...
Capacity of tanks:
No. ..... Cap. .....
Number of additional units needed ..

Rescue Trucks
Number .....
Age of units (or year purchased).....
No. ..... Age .....
Number needing replacement .....
Number of additional units needed ...

Ambulances
Number .....
Number needing replacement .....
Number of additional units needed ...

Squad Cars
Number .....

Foam Trucks
Number .....

Lighting Trucks
Number .....

Fire Alarm Trucks
Number .....

Shop Service & Repair Trucks
Number .....

Chemical Trucks
Number .....

Chemical & Hose Trucks
Number .....

Grass & Brush Fire Trucks
Number .....

Crash Trucks
Number .....

Salvage Trucks
Number .....

Pick-Up Trucks
Number .....

Chiefs Cars
Number .....

Other Motor Apparatus Not Listed Above
Type .....
No. .....

Replies were received from communities totalling 54,529,013 population out of a total population of 96,053,760 of all communities in the population group considered. The overall percentage of return was therefore 56.8%.

In the survey, fire departments of all cities over 5,000 population were contacted, but only a portion of those under 5,000 population were circularized.

Total population of the various groups, and the population covered by the survey in each group, are given in the table at the top of the following page:

This pumper wouldn't pump—not even for the Underwriters. With 24 years of service behind it, the unit refused to perform for a test crew from the National Board of Fire Underwriters. When the engine stalled, manual force had to be employed to get the motor turning over again. Failure of machines of this age to stand up under heavy fire fighting duty is to be expected.

Group	Total Pop. of Group	Pop. Covered by Survey	% of Total Pop. Covered
Under 1,000 pop.	4,129,049	47,503	1.15%
1,000- 2,500	5,383,976	152,505	2.84%
2,500- 5,000	5,512,970	427,580	7.76%
5,000- 10,000	7,569,509	2,565,118	33.9 %
10,000- 25,000	17,641,690	15,528,431	88 %
25,000-100,000	11,515,155	6,584,121	57.2 %
100,000 and Over	44,311,617	29,231,715	64.6 %

To get the total apparatus in each group, it was necessary to multiply the figures provided by those replying from each group by a factor, depending upon the percentage responding.

These factors follow:

Group	Multiply by
Under 1,000 pop.	87.0
1,000- 2,500	35.2
2,500- 5,000	12.9
5,000- 10,000	2.95
10,000- 25,000	1.75
25,000-100,000	1.135
100,000 and over	1.54

Thus, for example, if the 10,000-25,000 group replying reported 1415 triple combinations and pumpers, the figures would be multiplied by 1.75 to secure the total number of pieces in the 10,000-25,000 group.

Certain factors may have contributed to discrepancies in the final survey figures, but none of these is believed to have introduced serious error.

First, a number of those reporting failed to classify their apparatus properly in the questionnaire. Some listed as "pumpers" apparatus which should have been included under "triple combinations." Others listed as "triple combinations" units which should have been classed as "pumpers." In the tabulation as presented, triple combinations and pumpers are included in the one classification.

Some confusion apparently existed in the smaller departments as to the classification "city service trucks." In some instances these were classed as a "quadruple combination"; in other instances utility trucks were included under "city service trucks."

Because of the relative fewness of quintuple combinations listed in the returns, the age figures of these have not been given.

Should any material error be encountered, it will possibly be found in the number of pieces of apparatus in the groups of under 1,000 population and 1,000 to 2,500 population. In each of these instances, the number of communities sampled was relatively small, and a slight error in either would be magnified materially when multiplying by the large factor required. For this reason, the following tabulations give both the number of pieces of apparatus in all communities and also the total number in cities of 2,500 population and over.

Negligible coverage was attained among "county fire departments" and "fire districts."

Total Apparatus Cities 2,500 Pop. and Over	
Pumper & Trip. Comb.	11,499
Quad. Comb.	1,811
H.P. Fog Units	664
Aerials	1,896
Quintuple Combs.	255
Hose Wagons	602
City Service Trucks	595
Tank Trucks	807
Ambulances	815
Squad Cars	476
Foam Trucks	123
Lighting Trucks	308
Fire Alarm Trucks	482
Shop Service & Repair Trucks	421
Rescue Trucks	863
Chemical Trucks	24
Combination Chemical & Hose	86
Grass & Brush Fire Trucks	637
Crash Trucks	92
Salvage & Rescue Trucks	94
Pick-Up Trucks	767
Chiefs Cars	2,528
Fire Prevention Cars	139
Water Towers	24
H. P. Hose Wagons	11
Air Compresors	8
Smoke Ejector Trucks	3
Hose Wagons with Booster Pumps	93
Gas Tankers	9

As both of these classifications have been growing in number, and equipment possessed during recent years, the over-all figures for the total of apparatus in use throughout the country must therefore be considered on the conservative side.

Also many small rural communities, having one or more fire fighting units, may have been missed, which further reduced the over-all figures.

Nevertheless, the survey gives a fairly acurate picture of the present equipment of the nation's fire service.

Age of Apparatus

The survey is surprising in that it discloses the very large percentage of apparatus which should be considered over-age.

Probably the record for senility is an aerial ladder built in 1892, and subsequently converted to tractor-drawn. Fortunately, this aerial ladder is on the reserve list of the city it serves.

For senility of apparatus, the city service truck stands alone. Sixty-seven and five tenths per cent of these units are over 15 years old. Forty-four per cent are over 20 years old, 32% over 25 years old and 16.5% over 30 years old.

A better picture is shown by the pumpers and triple combinations. Here 48.8% are over 10 years old; 31.6% over 15 years old; 19.9% over 20 years old; 14.2% over 25 years and 4.7% over 30 years.

Hose wagons, as might be expected, likewise display venerable ages, 67.6% being 15 years old or older and 39% over 20 years.

The following table gives the ages of the different types of units:

PERCENTAGES OF FIRE APPARATUS OF DIFFERENT AGES

	% Over 10 Yrs. Old	% Over 15 Yrs. Old	% Over 20 Yrs. Old	% Over 25 Yrs. Old	% Over 30 Yrs. Old	% Over 35 Yrs. Old
Pumpers* & Trip. Combs.	48.8	31.6	19.9	14.2	4.7	1
Quad. Combs.†	58.0	36.8	15.7	10.7	3.5	1.3
Aerials	38.7	22.7	10.5	6.2	2.6	1
Hose Wagons	74	57.6	39	28.4	11.3	5.9
City Service Trucks	78.7	67.5	44	38.2	16.5	1

*Many classed "T.C.'s" with "pumpers." Two types combined in tabulations.
†Evidently "City Service Trucks" in some instances were included as Quads.

NUMBER OF PIECES OF APPARATUS IN DIFFERENT POPULATION GROUPS

Types of App.	Under 1,000	1,000- 2,500	2,500- 5,000	5,000- 10,000	10,000- 25,000	25,000- 100,000	100,000 & Over	Grand Totals
Pumpers & Trip. Comb.	7,743	5,104	3,018	975	2,476	2,030	3,001	24,347
Quad Comb.	4,089	1,865	800	247	318	125	123	7,765
H.P. Fog Units	957	56	219	147	145	56	97	1,677
Aerials	—	71	103	197	344	431	821	1,967
Quints	—	71	13	55	99	43	45	326
Hose Wagons	870	211	155	85	87	62	213	1,683
City Service Trucks	174	71	90	109	109	127	160	840
Tank Trucks	2,001	458	271	247	210	36	43	3,266
Ambulances	174	493	231	242	189	79	74	1,482
Squad Cards	261	176	142	79	114	52	89	913
Foam Trucks	—	—	13	12	12	19	67	123
Lighting Trucks	174	35	77	47	66	58	60	517
Fire Alarm Trucks	—	—	—	29	56	162	195	482
Shop & Repair Trucks	—	—	—	21	28	101	271	421
Rescue Trucks	—	—	219	204	189	148	103	863
Chem. Trucks	—	—	—	—	2	4	18	24
Chem. & Hose Trucks	—	—	—	38	16	10	22	86
Grass & Brush Fire Trucks	609	422	245	142	152	60	38	1,668
Crash Trucks	—	—	26	21	9	8	28	92
Salvage Trucks	87	—	—	18	24	11	41	191
Pick-Up Trucks	261	105	77	165	194	171	161	1,135
Chiefs Cars	348	105	142	253	490	578	1,065	2,981
Fire Prev. Cars	—	—	—	—	—	73	66	139
Water Towers	—	—	—	—	—	—	24	24
H. P. Hose Wagons	—	—	—	—	—	—	11	11
Air Compressors	—	—	—	—	—	—	8	8
Smoke Ejector	—	—	—	—	—	—	3	3
Hose Wagons with Booster Pumps	—	—	—	—	—	—	93	93
Gasoline Tankers	—	—	—	—	—	—	9	9

Driver Training and Safety Education in Fire Departments

Apparatus "Road-e-o" Climaxes Course of Instruction in New York Fire Department's Motor and Pump School

By LIEUTENANT THOMAS D. RYAN*

Editor's Note: One of the most serious problems facing the fire service today is that of the prompt, uninterrupted response of fire forces in answer to alarms for fire or other emergencies.

Already handicapped by delayed alarms, shortage of manpower and other drawbacks, the fire service is finding critically important response jeopardized by the ever-increasing traffic of all kinds on our thoroughfares.

In the effort to do their part toward alleviating this dangerous situation, many of the nation's fire departments have embarked on intensive driver training and accident prevention programs.

Among these departments is New York which is, as most of us know, the largest organization of its kind in the world. To keep its great fleet of "rolling stock" functioning at peak condition is the joint responsibility of those who drive and operate the equipment, and those responsible for its maintenance and repairs, the huge New York Fire Department Shops.

The story of the Shops has been previously been told in detail in FIRE ENGINEERING. Here is the story of the effort being made to train and educate the drivers and handlers of that huge fleet of vehicles upon which response of its fire fighters depend. For those who like statistics, that fleet presently numbers 221 pumping engines; 127 ladder trucks; 5 rescue, 4 searchlight, 6 water towers and scores of other vehicles, a fleet that covered over 2 million miles of travel last year responding to and returning from the 75,512 alarms and emergency calls which it answered.

Many improvements have been made over the years to facilitate response by reducing the number of accidents and delays due to driving errors and other mishaps. One of these developments was the formation of the N.Y.F.D. Accident Control Program back in 1948.

Good idea as it was, nevertheless little in the way of comprehensive driver training was undertaken until the present Fire Commissioner, Edward F. Cavanagh, Jr., added to the department's Motors and Pump Operators School (until then the high point of the program) the Safe Driving Clinic and Behind-the-Wheel Training Program.

This enterprising program was placed in charge of a Deputy Chief of Department (Thomas P. O'Brien), with one Acting Captain and seven Lieutenants assisting.

FIRE ENGINEERING believes it is time to tell the story of this department's program of accident prevention through training of its personnel. Lieutenant Thomas D. Ryan, who has been closely connected with the operation, was given the task of preparing that message. This is his account.

To Lieutenant Ryan, and to departmental photographers Lieut. Ray Hellriegel and James Heffernan, who took the pictures, go our special thanks. Also, of course to Commissioner Cavanagh and Chiefs Edward Connors, Assistant Chief of Department, Bureau of Personnel and Administration, and Thomas O'Brien for their personal interest and cooperation.

This is a big and comprehensive story. It will be continued in our October 1955 number; at its conclusion, the acknowledgments will be included in full.

FOR some time past, progressives in the field of firemanship training have realized full well that the Fire Service has contributed more than its share to the national picture of deaths, injuries and damages due to vehicular accidents. But all too few have gone beyond this realization and taken steps to appreciably alter this situation. Surveys show that some type of driver instruction is carried out in the majority of municipal departments, but few of them have a comprehensive and coordinated training program for drivers and pump operators. In the smaller departments training on a planned basis seems to be virtually non-existent. In firemanship training courses the accent is placed on operations at fires or what to do when the apparatus arrives at the scene. Such training, however, is pointless if the apparatus never arrives, due to an accident which could have been avoided had the proper emphasis been placed on driver training.

One noteworthy exception to this situation is the City of Los Angeles which has set up an admirable program under its progressive fire administration, employing officer personnel as driving instructors to supervise and guide the drilling of chauffeurs by company officers, with both groups aided by a Training Division which also does research on the subject and issues printed material for the guidance of all members. A plan, such as is hereinafter described, was undertaken during the past year in the City of New York but some phases of it are still in the formative stage. Accident reductions in both cities have substantiated the value of this type program. A recently released yearly report of this department from its Accident Control Bureau, shows an overall decrease of 14% in apparatus accidents, while accidents to apparatus while actually on the move showed a 20% decline. Admittedly, many other factors are involved in this improvement, but undoubtedly the driver training program, including the use of testing devices, was a most important contributory factor.

Like the general public, those of us in the Fire Service are aghast when the picture is highlighted by a particularly horrible accident (See cover of FIRE ENGINEERING, August, 1954) with its aftermath of the tabloids depicting a small child accepting a hero's medal for his father—such award being made posthumously. Deaths and injuries are common enough in our fire operations without adding to the total by accidents to apparatus while responding to or returning from alarms and even by accidents *between fire apparatus.* Even in our recent memory we have seen these and similar headlines in the various news publications:

"Dayton, Ohio: Chief's Car and Aerial Truck in Collision. One Dead, Eleven Firemen Injured."

"New Haven, Conn.: Deputy Chief and Fireman Killed, Scores Injured, Pumper Wrecks Chief's Car."

"New York, N. Y.: Rescue Company and Aerial Truck Collide. Two Killed, Nine Firemen Injured."

For a time there may be talk that something should be done about such incidents, but after a brief interval they gradually sink into the limbo of our memories and are accepted as "just part of the job." Invariably the newspapers depict the apparatus as "speeding to an alarm," but the truth of the matter is that in too many instances the company was *returning* from an alarm under conditions wherein there was no excuse for excessive speed, since they were in service via radio. It is no excuse that ours is an emergency service and we must expect to pay some penalty for such. While it is true that we have some license, due to the nature of our work, we have no right to abuse the privilege.

Another side of this picture shows that safety engineers and specialists in universities, delving into every aspect of motor vehicle accidents in their efforts to reduce deaths and injuries, seem to have an apathetic outlook on this particular phase. While individual departments keep records of the number and type of injuries, etc., for their own information, and some even break them

*Asst. Supervising Engineer, F.D.N.Y., and Instructor in Motor and Pump School of New York Fire College.

down into their different causes, there is no pooling of this information for mutual benefit.

Widespread inquiry into authoritative sources could elicit very little statistical information as to what part fire apparatus plays in our national picture of death and injury on the highway, insofar as frequency, cost and causes of such accidents are concerned. Indeed, one safety expert, in conceding he had nothing on this topic, gave as his opinion that fire apparatus accidents seem to be "sometimes spectacular but actually very few in number and importance on a national scale." Interestingly enough, in his own city an investigation showed that there was an average of over one reported fire apparatus accident every other day, with a yearly toll of over forty men injured and one killed.

The records of individual departments show additional high costs in repairs and maintenance due to major or minor vehicular accidents but it is tacitly understood that such records do not include many others "taken care of" in quarters in order to avoid official investigation and censure. Frequently, sheer luck spells the difference between these minor accidents and a real tragedy.

Present Programs Inadequate

Most, but not all departments require that their chauffeurs possess drivers licenses issued by the State Motor Vehicle Bureau before they are permitted behind the wheel of a piece of fire apparatus, but this in itself is a negligible recommendation. It merely shows that a man has qualified to drive his own car or a commercial vehicle by proving his worth in at best a light passenger car. Not even the most optimistic individual would deny the existence of a wide gap between such a qualifying test and the transition to a 240 H.P. aerial truck or pumper, racing against lights and traffic, with siren screaming and mind intent on facing some unknown and possibly dangerous situation. Even in handling a chief's car, although the vehicle type is the same, the situation is entirely different from pleasure car driving.

Today, nearly all states require applicants for driving licenses to pass a vision test, written test and a road test, but in two states a license is still granted upon the mere paying of a fee. Without seeking to detract from fire apparatus chauffeurs as a whole, the truth of the matter is that many of them hold licenses obtained in the days when there was no written or actual driving test required. State licenses, as a rule, are reissued without any visual or physical examination and many fire departments are also guilty of neglect in this common-sense, periodical check-up.

In many cases the chauffeur, like Topsy, "just grew" into the job — in rural districts, perhaps, because he was the local garage mechanic, and in the larger, even metropolitan areas, because he was "good at motors." Furthermore, it has been found that in many departments the task of training chauffeurs is turned over to an individual whose sole qualification is that in his day he was an excellent chauffeur, or the fact that he is an officer. While both these factors may be assets, they are not in themselves any assurance of good instructorship.

Preliminary steps in selection of candidates include a traffic and driving knowledge test. Acting Battalion Chief Harry M. Irwin, Fire Department Supervising Engineer and Chief Instructor at the Motor and Pump Operators' School, supervises group of candidates taking examination at the New York Fire College.

Trained Instructors and Planned Instruction Needed

"Learn By Doing" is a pedagogical axiom deeply rooted in the training processes of firemen but it does not endorse an individual getting into the driver's seat, accepting the responsibility of his own and his fellow firemen's lives and attaining some degree of accomplishment by learning to drive "the hard way." The result of such methods will proabbly be damage and injuries. New members should have the benefit of detailed instruction in a driving school, with ample opportunity to become completely familiar with the apparatus in an atmosphere of safety and with the distraction of passing traffic eliminated. Following this, they should be gradually "broken in" on company apparatus by driving it back from alarms—in the daytime at first, then at nights, and not under adverse weather or road conditions.

As in other areas of firemanship training, effective instruction in driver training and safety education presupposes four basic steps or procedures:

1. Adequate preparation by the instructor and setting up a practical procedure for "putting over" the lesson This step also embodies creating a sincere interest among those to be instructed.
2. Presentation by the instructor of the information by means of lectures, demonstrations, illustrations or discussions.
3. Application by the members by putting into actual practice, step-by-step, the work as outlined and demonstrated by the instructor. This step requires close supervision by the instructor.
4. Checking or testing, wherein the instructor determines the participant's ability to apply the instruction given by testing him in the actual performance of driving. Misimpressions or faulty performances are detected in this manner and may be clarified at this most opportune time. All four of these basic instruction steps presuppose an adequately trained instructor and a carefully selected group of candidates.

Examiner (left) administers Peripheral Vision Test. Deficiencies in such (Tunnel Vision) constitute a basic contributory cause of accidents at intersections.

A. A. A. official tests candidate for depth perception. Deficiencies in such may cause accidents in passing other cars or in weaving traffic.

Candidate's ability to see at night and susceptibility to temporary blindness caused by oncoming headlights is tested by glare acuity and night vision device.

Meanings of reaction distances and braking distances are "brought to real life" using detonator device and explanations by E. Capillo of the A. A. A. to group of candidates in the Motor and Pump School.

Generally speaking, when setting up a Driver Training Program the problem resolves itself into two phases:

1. Training new members to drive fire apparatus.

2. A "refresher" or checking course for those members already assigned to the job of driving.

Under ordinary conditions the first part of the program can best be administered through the medium of a driving school in a set-up such as is hereinafter described. Such a procedure has definite benefits both from a safety as well as an efficiency standpoint. The second part of the program can be administered at company quarters while the company and its members are "in service" to respond via radio.

The problem of training personnel in this field rests jointly on the shoulders of the company officers and those officers constituting a corps or board of driver training instructors. Such a group might well be incorporated in the Division of Training. They should be carefully selected for their background and ability to serve competently, and thoroughly trained by one of the agencies specializing in driver training. They should, then, be organized into a unit or group whose job it is to set up a program tailored to the needs of their particular department.

In the incipient stages of developing a program, guidance should be sought from the various agencies which have specialized in this field and have substantiated the effectiveness of their training programs by marked improvements in accident and injury rates.

At the present time over forty colleges and universities devote part of their curricula to this area of training. A complete list of these educational institutions, which are members of the National Committee for Fleet Training, may be procured from the Institute of Public Safety. The Penn State University, State College, Pa. A complete list of other kindred agencies, both public and private, who are similarly interested in traffic and safety, may be found in "Man and the Motor Car," a publication of the Association of Casualty and Surety Companies. All of these agencies are available for consultation and guidance and most of them, it is felt, are willing to train and qualify members as instructors who, after a suitable period of orientation, will be able to set up programs for their own departments.

In large municipal fire departments, it might be advisable to detail officers exclusively to this work. Such a highly specialized group could well be used on Accident Investigating Boards and perhaps assigned to the task of responding to the scene of serious accidents to secure facts at first hand while they are still "warm." They could then analyze them in their true light and have a complete picture ready for the official investigation. Following such inquiry, they could take whatever ameliorative or retraining steps would be indicated in cases where either driver negligence is shown or where the accident could have been avoided through proper action of the driver.

In the smaller departments, it might prove more practical to have this training conducted by one or two officers who would cover an entire area. Departments operating under a State or County coordinating, or mutual aid, plan would definitely benefit from such a procedure. Another opinion advanced and perhaps worth considering is to have the manufacturer, when delivering a new piece of equipment, include instruction not only on the operation of the pumper or aerial truck but also on the proper driving of it. This could be done through the medium of attendance at a duly established drivers training school or by having only accredited driver training instructors break in men on new apparatus. Their trained instructors would obviously be fully conversant with the individual aspects of their equipment.

Besides conducting a training program for new drivers, the Board of Instructors should visit each company in the fire department at regular intervals to conduct a "refresher" course for those men already qualified as drivers, and at the same time provide guidance for the company officer. However, this latter group should first be trained through the medium of lectures and demonstrations in the Company Officer School. Subsequent to such training, the Company Officer should have the benefit of guidance materials compiled as a result of research by the Board of Instructors assigned to the Training Division. As a result, the Company Officer can readily incorporate such instruction in the list of topics covered in his daily drills. Such a move should go a long way towards insuring that the driving skill of company personnel is continually up to established standards. Preventive maintenance of the apparatus can be tied in with both types of instruction, with special emphasis on mechanical failure due to poor driving habits and lack of proper inspectional procedure.

Selection of Candidates

Experience has shown that the best constructed vehicle and the best me-

chanics cannot compensate for poor driving habits. It is an established fact that a good driver is an efficient driver—the product of careful selection and competent training, constantly and properly supervised—and that good drivers are made, not born. Professional drivers with the best road records have learned the wisdom of driving "defensively," i.e., operating their vehicles with such care that, no matter what other drivers may do, they will be able to protect themselves and not become involved in accidents because of the mistakes of others. Such does not mean "guessing" what the other driver may do.

Furthermore, many accidents or instances where vehicles must be placed out of service are too readily attributed to defects in the apparatus or to bad driving conditions, whereas the truth of the matter is that more often it is the direct result of driver failure, either in operation or maintenance. Studies show that of thousands of accidents a mere 15% can be ascribed to mechanical failures such as failure of equipment or damage due to defect in the road. The remaining 85% of the accidents are caused by human failures such as carelessness, incompetence, recklessness, inattentiveness, inability to judge distances accurately, or slow reactions on the part of the driver. Apropos of this one special survey on a long stretch of one of the nation's foremost highways (Pennsylvania Turnpike) disclosed the startling fact that the aforementioned reasons accounted for 97 per cent of the accident fatalities. In addition, poor driving practices can, and do, reduce the normal life expectancy of apparatus and result in needless waste of equipment, time and labor.

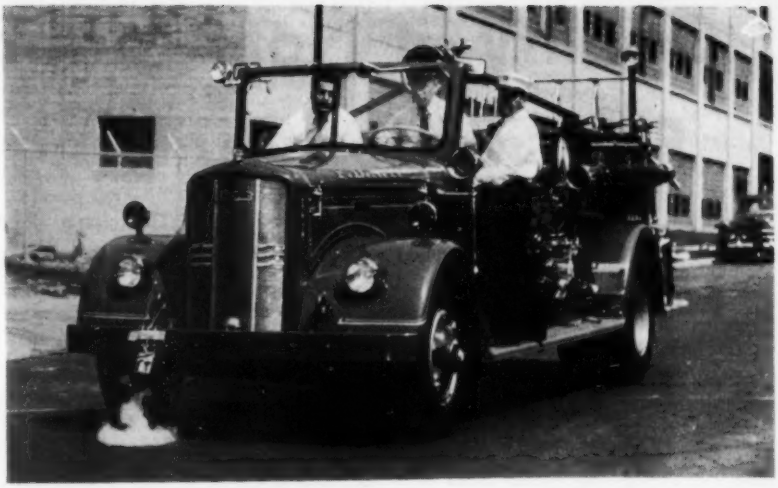
Criteria in Selection

One of the basic criteria in driver selection is that the candidate be at least of average health and that his sight, hearing and color perception be satisfactory. Such tests are best administered by a physician and should be repeated at stated intervals on those already assigned to drive.

Because of the burden of his responsibility, complete sobriety while on duty is an absolute *must* for a fire apparatus chauffeur. Contrary to popular belief, taking aboard "one or two for the road" does not sharpen the wits of the driver or make him more alert or efficient. Instead alcohol, *even in very moderate quantities*, tends to dull the sight, hearing and sense of touch. It slows down the nervous system, including the brain and impairs judgment, skill and reaction. It is true that an individual may feel a decrease in self-consciousness and an increase in confidence, with mingled feeling of ease and relaxation, upon using alcohol. However, the fear of consequences can be destroyed, and safe driving practices disregarded. Under such conditions, a driver will not be able to accurately judge the speed of his own or of another's car nor can he correctly estimate the distances being covered by each.

According to experiments conducted by Yale University Laboratory of Applied Psychology, within one hour after imbibing three and a half ounces of whiskey, a driver's visual reaction time can be slowed as much as 34 per cent. Another recent publication carried the report of tests conducted on two controlled groups to determine the effects, if any, of mild indulgence. Both groups were made up of individuals so skilled as to qualify as driving instructors. First, they all executed some tricky driving maneuvers and both groups gave par performances. One group repeated the performance in a few hours and, due to previous practice, showed a 20% improvement in driving ability. Some of the other group consumed three or four bottles of beer and others had three or four ounces of whiskey between trials. One hour later they went through the original driving performance. Instead of improving like the teetotalers, of the first group, they showed marked deterioration in driving ability. The beer drinkers lost 18.6% of their original efficiency and the whiskey drinkers' skill was off 32.7%.

All driving instruction should be on an advanced level as it is hardly worth while to devote the time necessary to train a complete novice. Acceptable candidates should be limited to those showing a marked interest in the job ahead. One recommended method of securing the cream of driver candidates, and maintaining acceptable standards of efficiency in the operation of fire apparatus, is the policy of departments in providing extra monetary or promotional inducements for the job itself. If the job is thrust upon a man in spite of his personal objections, he will learn little from any instructions given him. Each candidate should have an adequate background of driving experience, with commercial experience an asset but not a necessity.



Reaction detonator on front bumper is fired by instructor in test of driver's reaction time.

Physical Examination.

The initial step in a series of qualifying tests for new candidates should be a complete physical examination by a doctor. Such examinations should be repeated at regular intervals, preferably every five years, for all members who drive fire apparatus. Studies tend to show that the physical and mental condition of drivers largely determines whether or not they are likely to become involved in accidents. Specifically, ten per cent of all fatal accidents are caused by drivers who have some physical defect, and more than fifty per cent by drivers violating traffic regulations, which is another way of saying that in some way or another the drivers causing these accidents were not mentally fit, or mentally on the job.

Countless reactions which the driver makes depend on the sight signals he gets. Sight of danger, for instance, is the signal which sets off the stopping reaction. Therefore, these sight signals must tell the truth and tell it quickly. A minimum of 20/40 visual acuity is recommended as a requirement for issuance of a driver's license by the American Association of Motor Vehicle Ad-

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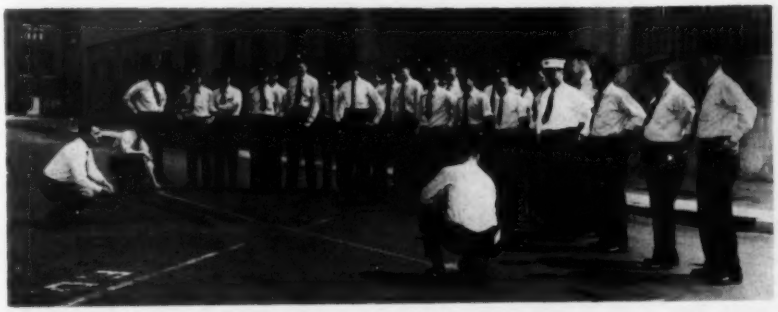


Reaction distance plus braking distance constitutes total stopping distance. As other candidates look on, distance between detonator marks are measured by two members of class.

Quality, if Not Quantity, Marks Fire Station Building Program

Although Breaking No New Building Records, the Fire Service Is Setting New Design and Construction Standards

By ROI B. WOOLLEY
Assistant Editor Fire Engineering

TEN years ago the author of the accompanying study, writing in FIRE ENGINEERING, said that since Dec. 7, 1941, building of new fire stations had been practically at a standstill.

Today the fire service building program has in many ways failed to keep pace with the growing need of new fire stations; nor has it measured up to the boom in building in nearly every other field.

That is the dim side of the picture; on the bright side, we find such fire stations as are being built, particularly in the municipalities having permanent fire forces, taking on new lustre, new comforts and conveniences, to make them more 'clublike,' even 'homelike.' For the first time in its history, it seems the planners of housing for the fire fighters are talking about 'motifs' and 'decor'. What are we coming to!

This is a review of some of these new developments in representative cities and comunities of different size. No attempt has been made to give the complete specifications of the different stations, or their cost. Those of our readers who desire these details can doubtless secure them from the respective fire departments listed herein, or their architects and builders.

The editors are grateful to the large number of fire chiefs who so generously cooperated with us in this and other studies of fire service construction.

Parts of this text are included in the paper on Fire Station Design to be delivered by the author before the International Association of Fire Chiefs at its conference in Omaha this month.

What's the matter with our fire stations?

As near fire safe as a fire station can be, this modern Omaha, Neb., fire house sacrifices little in the way of attractiveness to convenience and utility. One and a half floors, no sliding poles or hose tower, clear-vision ramp, large doors and attractive landscaping, are visible features. And the interior layout measures up accordingly. The Omaha Fire Department (Chief E. W. Fields) will be host to the I. A. F. C. this month.

That question presupposes the fact that something is the matter with them.

To the author of this study, that statement is correct, making due allowance, of course, for the all-too-few modern fire houses that have been built, and are being built.

A number of authorities go even further: They believe there are not only too few modern fire stations in this country; there are too few fire stations of all kinds. In their opinion there are too few, notwithstanding the fact that in some of our larger municipalities fire houses are being decommissioned, buttoned up for one reason or another, the prime one apparently being economy, and because some "surveying or research agency" has decided there is more than enough fire protection for the areas in question.

Authorities point out that, with but few exceptions, there is hardly a city in this country but what is short fire protection in some sections of the areas it is committed to safeguard. For the most part, they maintain, these municipalities have spread out and have reshuffled their residential, business and industrial districts, without readjusting the existing protective fire forces, or creating the necessary new protection units.

This is not a study of the wisdom, or lack of it, of cutting down the nation's fire forces; we are concerned purely with the question of quartering and housing those fire forces, existing and proposed.

Surveys by FIRE ENGINEERING and the National Board of Fire Underwriters, and insurance rating bureaus, will attest the statement that today many of our cities, as well as towns and villages, lack suitable protection. This may be due to lack of fire units and stations in recently developed or annexed political sub-divisions, or it may mean weakening of forces in the high value districts. These surveys in many cases emphasize the fact that a large percentage of existing fire stations not only remain where they were built, as far back as the horse-and-buggy days, but also they have enjoyed no major improvements or alterations, inside or out, to house modern fire fighting equipment, and to make them more efficient, more livable for the fire forces that must perforce occupy them.

Designed for better fire fighting—and living—this Willow Street Fire Station of the City of Newton, Mass., is one of three modern stations designed by Gustav A. Hagen, Architect, for that city. The other two, Elliott Street and Croft Street Stations, embody all the latest conveniences and structural features to improve efficiency and the working lot of the fire fighter.

Not only are many of our present-day fire stations woefully out-of-date, measured by architectural and constructional standards, but many of them are actual hazards because of structural weaknesses. Some of them, it must be confessed, also are Class A firetraps. Heaven only knows what would happen to these ancient relics if an enemy dropped an atom bomb anywhere within miles of them. Incidentally, the number of fire stations in this country that are involved by fire, some being wrecked by it, is relatively large. From which it may be gleaned that fire fighters of yesteryears, at least, weren't so fastidious about fire-proofing their own "home quarters." There seemed to be a queer thinking back in those days, which reasoned that as long as a fire department was going to occupy the structure it just couldn't burn, no matter what it was made of.

And so they stand, these architectural and building misfits and monstrosities, too many of them, in too many cities, towns and villages, monuments to the romantic past, and just about as useful as monuments today, so far as providing efficient living quarters for smoke-eaters.

There is much talk nowadays about morale or lack of it in the fire service. Show us a place where morale is wavering or at low ebb and we will show you low-grade housing for fire fighters, as at least one contributing cause. It should be obvious that sub-standard fire department housing has an adverse effect on personnel compelled to endure it.

Following this same line of reasoning, if the fire service wants to attract more high class personnel to itself, and to continue to hold capable men already in it, it will have to provide living quarters that are as attractive, comfortable and well equipped with modern conveniences as the average fireman's own home.

This philosophy is too often overlooked by those civic officials responsible for improving and maintaining our fire forces, especially when they consider construction costs (we've known fire chiefs, also, who were similarly affected). But what many do not realize is that these construction costs are quite likely to go *higher* before they *drop—if they ever do!*

Purpose of a Fire Station

All of this makes it necessary to plan our fire stations well and wisely; to design and build units that will contribute toward greatest efficiency in the department; furthermore, to adopt and install in such buildings all possible time and labor saving devices.

In this planning and construction program, fire stations should be located and built with consideration not only of *present* needs and service the fire forces must deliver, but also the part they must play in the *future*.

One other important factor: fire stations are unlike other functional designs; there are not many architects and builders today who specialize in fire station design and construction. Planning a modern firehouse is not like planning a store or factory. It is very easy to make serious and costly mistakes when you are dealing with such factors as split-second response of fire forces and with living and working conditions having no counterpart in business or industry. No fire department can afford to experiment in this field of building, at the taxpayers' expense.

It is just possible that some of our municipal authorities have missed the purpose and meaning of the term "fire station." They may still be thinking of it in terms of a sort of factory, or service station, or perhaps a "barn" (the fire station is still called a fire barn in a number of communities in this country —and, one might add in some instances, appropriately so).

The term "fire station" may cover many different types and kinds of structures, from a dingy corner of a crossroads filling station, sheltering the crudest of fire appliances, to a block-large municipal fire headquarters, housing several fire companies. It may connote a "meeting place" or "town hall," or even a vast community center, in which the fire department is but one civic unit. We are not so much concerned with what it is called, as we are with what it is, and its purposes, how it functions.

What are the essential purposes of any fire station As we see it, there are two: First, to house, shelter and service the fire fighting apparatus and equipment most effectively to further the department's objectives in suppressing fire; second, to provide the personnel of the department, who spend a goodly part of their working lives in fire stations, with at least the creature comforts, if not the luxuries, of home, so that they will be more contented with their calling, and thereby more efficient as fire fighters, when they are called upon to go out and battle with their destructive foe, fire.

Site and Surroundings

Considering the first purpose: the site and the immediate surroundings of a fire station have an important bearing upon its efficiency with particular regard to response.

It is assumed that when the decision is finally reached to erect a new fire station, most of these fundamental factors relating to location will have been carefully weighed. They include the area to be protected—whether residential, suburban, mercantile or industrial (or rural); whether congested and built-up (high hazard) or open, zoned or unrestricted; the proximity of schools, hospitals and other places of public assembly; also the geographical and topographical relation of the station to other stations in the district or area; lastly, the type ot fire company or companies that will occupy the station; whether engine, ladder, rescue, etc., and whether

New Station 4 of the East Providence, R. I., Fire Department, Chief John A. McLoughlin, provides individual bedrooms for personnel for real privacy and uninterrupted study, pleasant recreation room for group comfort, neat but compact modernistic kitchen, all on one floor, brick house in attractive setting in a residential district. Note neat commemorative tablet and flag pole at left.

Spokane's new Station 10 has more room than it appears. Overall it measures 75 feet, 6 inches by 62 feet, 6 inches. At left of large apparatus floor (50 feet by 30 feet) is captain's office (two beds), dormitory (eight beds). At rear is large washroom and toilet, utility room and kitchen. At right is the recreation room behind company alarm and station office. Building finished on the outside in sand colored brick veneer, and features overhead doors, heating by forced circulating hot water radiant panel using 1,000-gallon buried oil storage tank, and heating panel embedded in concrete floor slab.

or not a chief officer or officers will have their headquarters there. The total number and the type of apparatus or vehicles to be quartered therein (of course anticipating future additions), is a fundamental consideration.

The thoroughfare upon which the station is located plays a big part. The street upon which the station opens must be of good width; it should of course be paved, and it should not be dead-ended a half block or so from the station in one direction. The question of suitable restrictions for public parking (and for stowing the cars of departmental personnel) must be answered and there should be the minimum traffic congestion around a fire station.

The doors of a fire station preferably should tace in the direction of the most numerous runs, or certainly in the direction of the high hazard, or other important district to which the company or companies are to respond.

The doors of a fire station preferably should face in the direction of the most numerous runs, or certainly in the direction of the high hazard, or other important district to which the company or companies are to respond.

There has been, and perhaps always will be, difference of opinion as to whether or not a fire station should face directly upon a boulevard, or other heavily traveled through street or whether it should be located a block or two away on a side street. Logically, in downtown areas there isn't much choice, except that in the light of today's traffic problems, the station location should not be such that the apparatus will be forced to travel extra distances because of having to avoid one-way thoroughfares.

Generally, the preference is for location on the boulevard or other through street (as distinct from "throughway" or "turnpike").

Another detail of location as related to streets are traffic lights and controls. The modern trend is to have traffic controls that can be operated from within the fire station, to assure responding units maxmum clearance.

Still another desirable feature is setback. This may not always be possible, particularly in the business section where land values are high, and pedestrian and vehicular traffic heavy, but the heavier it is, the more desirable to have a location that will permit safe exit from the station, and uninterrupted turn either way into the highway. Driveway space should have sufficient width to facilitate turns, and backing into quarters.

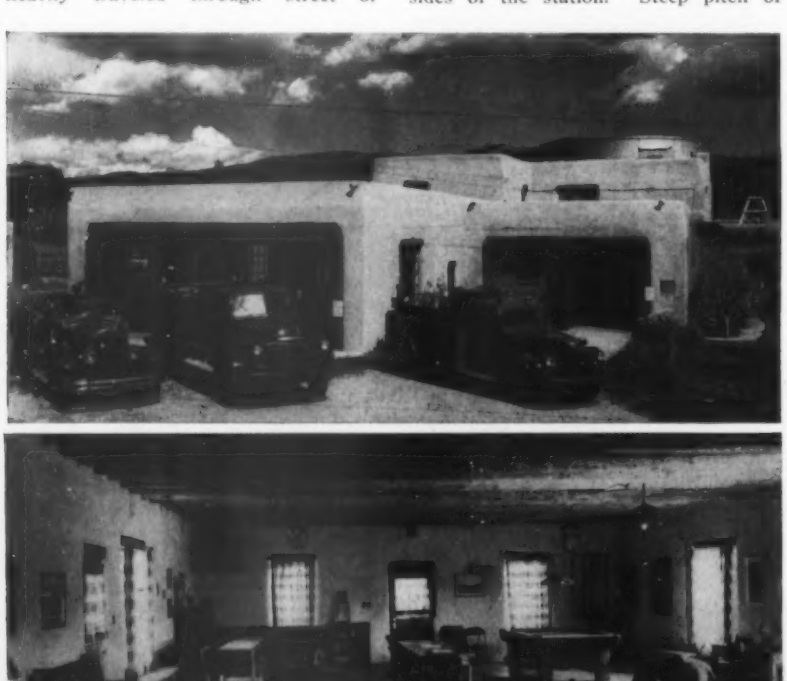
A corner site is generally considered more desirable, particularly if it permits apparatus to respond from two or more sides of the station. Steep pitch of ramp or approach to the station is not desirable; the footing is liable to become slippery and create driving hazard.

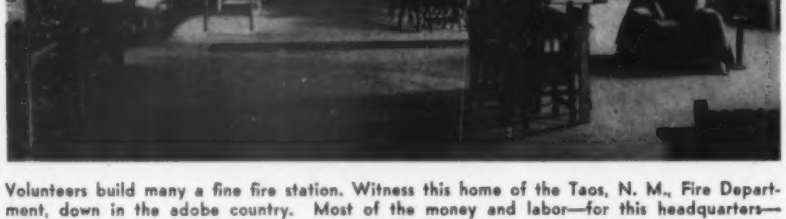
In recent years there has been a definite tendency to locate fire station sites so that stations may be built on the drive-through type. There may be some objections to the extra doors, with greater difficulty in maintaining warmth in winter, but this type station greatly facilitates response, and returning to quarters, and may provide better ventilation and more effective cooling in hot climates. Of course, in such areas air conditioning is almost a necessity.

Another important factor of site, is to locate the station on sufficiently large plot. This is essential for locations in residential areas. It provides opportunity for some landscaping. If possible the plot should provide room for an exercise yard, or court, such as for handball. This can be "landscaped" so as not to offend the most fastidious neighbors. Obviously, any landscaping should be adapted to the station's design, layout and surroundings. Some chiefs believe it enhances the layout to have a neat flagpole, and possibly an attractive, unobtrusive sign on the grounds. The reason for the sign is to more readily identify the building as a fire station to the passerby who may be seeking aid and information.

The problem of locating a fire station has probably caused more debate than anything else affecting the fire service. It is ironical that the very people who would scream loudest at not receiving good fire protection are among the first to protest locating a fire station in their immediate residential neighborhood. Fortunately, however, architects and chiefs have been able to join forces in designing the types of stations that harmonize with their architectural surroundings and to so operate that, but for the movement of apparatus responding and returning, one would be unaware that the building housed a fire company. Some proof of the adaptability of such stations to blend with their immediate environs is evidenced in the accompanying illustrations.

Fire chiefs who encounter the opposition of taxpayer, real estate, religious and other groups in selecting a site for a fire station in a residential area should be able to use this, and other available evidence (such as the fact that locating a modern fire station in any residential area has not reduced property valuation, but rather increased it), to calm and convert this opposition.





Volunteers build many a fine fire station. Witness this home of the Taos, N. M., Fire Department, down in the adobe country. Most of the money and labor—for this headquarters—built a section at a time—came from local folks. Total inventory, apparatus and equipment worth over $100,000. Permanent fireman and wife have apartment upstairs. The top photograph shows station and apparatus. Note type of architecture which blends with local construction. Bottom: Large meeting and recreation room showing a number of paintings donated by local artists. Note "Viga" ceiling. Long peeled logs called Vigas are used as ceiling joists. There is an air space and then a sloping (fairly flat) roof.

"Thing of Beauty and a Joy Forever"

The author of this study is neither an architect nor a builder. As a fireman he has done more "undecorating" than interior decorating. He is not concerned with whether the fire station motif shall be early American, British Renaissance, or early Sanskrit, or whather the interior decor shall be Louis XI or Scandinavian Modern. He is concerned, however with (1) whether or not the fire station, by location, design and construction, will measure up to its objectives—and needs of the department; (2) that it meet the requirements of those who are going to live and work in it; (3) that it will satisfy those who will live and labor in its immediate neighborhood.

Whether it follows the pattern of business, or of residential design and construction, there is no good reason why the fire station should not be *"A Thing of Beauty and a Joy Forever"* to both firefighters and citizens. Even an architect who knows little about the special needs of the fire department should be able to design a fire station that combines beauty with utility.

And here, briefly, are a few details of design and construction that may help to that end:

A fire station should set a good example to those whom it must serve by being as nearly "fireproof" throughout as humanly possible. There is no limit today to the scope and range of flameproofing, of essential materials that enter into the construction and furnishing of fire station.

Multiple and "drive-through" entrances and exits should be provided wherever possible.

Chromium and stainless steel effectively replaces brass.

Plentiful use of glass block, ceramic tile, plastics, composition rubber and other modern building materials is recommended.

Elimination of the out-of-date sliding pole and pole hole is in order.

Stairways, where they are necessary (the fewer of them the better) with narrow treads; "slip-proof finish"; easy to ascend and descend; well-lighted, and with substantial handrails are desirable features.

Elimination of the old hose-tower is a step in the right direction. There are more modern ways to dry hose.

Lots of light! Both natural and artificial. Believe it or not, some of our latest residential type stations have picture windows.

Even the artificial light can be "daylight" (be careful how you use fluorescent fixtures where quick light is imperative).

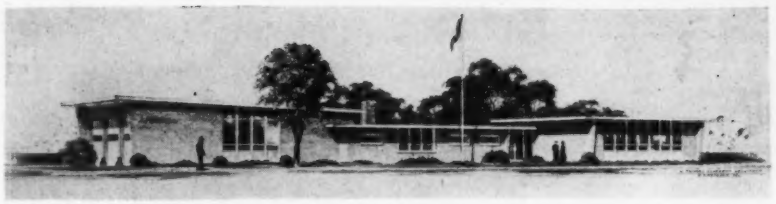
Plenty of electrical circuits and outlets (make allowance for cooking, heating, ventilating, air conditioning, operating doors, charging batteries, and dehumidifying as well as shop work) should be provided. Consider glare-less and shadow-less fixtures.

Automation wherever possible: plenty of time and labor-saving gadgets such as automatic door-openers and closers; light cut-ons and cut-offs; pole-hole guards (if you've got to have poles); automatic control of heat, ventilating, air conditioning, water-heating, humidifying, etc.

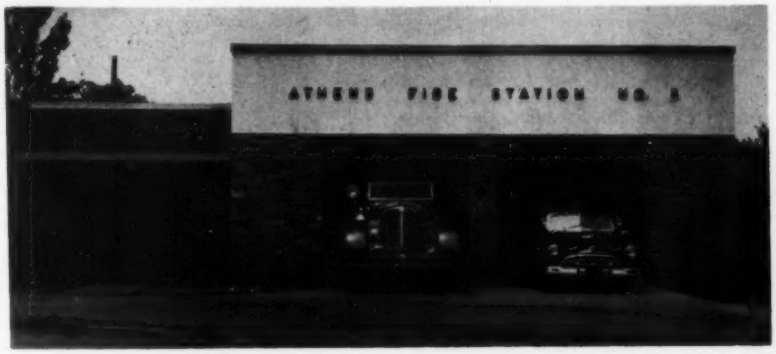
Accoustical sound conditioning may be included, where advisable. Consider another form of "sound conditioning"—elimination of big bells (many departments are substituting chimes and signals that don't shock the nerves).

More and better washrooms and sanitary facilities are in order. More lavatories throughout the station, including basement (a small one for the public) are recommended.

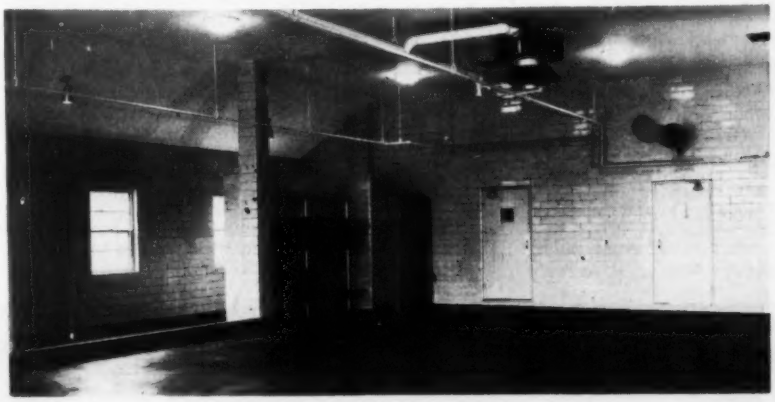
Roomy, well ventilated, lighted and heated washrooms as well as shower and washing facilities for every man on shift, are essential, as are also individual ventilated, roomy, sanitary lockers for every man, ample storage space, easily "get-at-able"; special provision for stowing turnouts, bunker clothes and work clothes (preferably air conditioned) and elimination of sharp corners and "rabbit warrens," to collect dirt and vermin. It is desirable to install rounded corners and like improvements that make for easier housekeeping, and have plenty of closet room.



Not a streamlined schoolhouse or club, it's the modernistic main station of the Levittown, L. I., Volunteer Fire Department, protecting that fabulous village that blossomed overnight. At left is the three-door apparatus room. Behind this is the dispatcher's office, heater room, commissioner's office and waiting room, recreation room, three company rooms, large lounge. At the far right is a large assembly room and (in court) vestibule, men's and women's facilities, chief's room and storeroom. W. Thomas Schaardt was the architect.



Economical to build, nevertheless this new No. 3 Station of the Athens, Ga., Fire Department has ample room for two apparatus units, officer's quarters and sleeping and recreational facilities.



Modern apparatus floor of Station 4 of the East Providence Fire Department has many features. It is roomy enough to manipulate two large pieces of apparatus, has overhead heating and lighting, floor drains with special apparatus washing section at far left, hose racks next to electric hose dryer. Note two of many entrances leading from hallway and crew's quarters into apparatus room; also public address system over door. Room has protective clothing rack (not shown).

The elimination of all possible obstacles to the quick response of men and apparatus, such as posts and pillars on the apparatus floor; depressions, or ridges in the floor itself; portable heaters; doors that open the wrong way; clothes racks; gas pumps and the like, must be considered.

Have an attractive entranceway (apart from apparatus floor doors). If you're proud of your station, perhaps a neat but unobtrusive placard or plate near the entrance, giving data about its erection, etc., would be in order. Many fire departments label their stations with a neat "professional board" or with stainless steel or chromium symbols by the entrance.

Don't be ashamed to put a bit of home life into furnishings, such as curtains, floor coverings, window shades. A Virginia fire station sports hand tufted bed spreads and other touches in which we suspect the ladies auxiliary had a hand. And there is no reason why interiors should not be colorful. The day of the tiresome "institutional" white tile and fixtures, drab gray painted floors, rusty plumbing and rustier spittoon are gone. The tendency today is for more homelike or clublike atmosphere.

And now let's discuss in greater detail

those other essentials, such as the apparatus room; watch room; dormitory; basement; kitchen; recreation and meeting rooms; officers' quarters; workshop, laundry, etc.

Watch Room—No longer a desk, but an office. The focal point and nerve center of every fire station is the watch, or control room, where supervision is maintained over all communications, movements of the company in and out of quarters; contacts with visitors, and keeping of certain records.

The old-fashioned "watch desk" (or table) located out on the apparatus floor, has in most new structures given place to a separate, individual room or alcove, in which are centered all essential fire alarm communications, door and traffic lighting controls.

Preferably this is enclosed in vision-free shatterproof glass or plastic, insulated against drafts and noise, and the whole is raised at least six inches above the apparatus floor level. If not near the entranceway, it should command all entrance doors.

The arrangement of assignment and bulletin boards, radio consoles, telephones, annunciators, speakers and other signaling and alarm equipment, should be compact and orderly. There should be cabinets (preferably painted metal) for assignment and watch cards. The whole should be well lighted, with approved fixtures to reduce glare and shadows. Another feature is concealed wiring. Floor and wall construction should provide concealment, yet easy access to wire and cables. And of course, due provision should be made for heating and ventilation.

While we are on the subject of communications, a stationwide public address system is highly essential.

Apparatus Room—"Show Room" of the Fire Department. What the first floor is to the department store, the apparatus room is to the fire station. It is one of the first and foremost considerations in planning any station. And it is perhaps the chief factor that is misjudged and mis-planned by both architect and fire department. These errors come from failing to anticipate future developments in both number and types of apparatus that may be had to be quartered therein.

Newness and dispatch, plus vision, feature new Portland, Ore., Station. Engine 22 has many features, one of which is this watch office. It is located to permit observation of apparatus floor, is well lighted and attractively furnished, with two tone tints, inlaid floor covering and colored metal furniture. Note compactness with which all radio and wire controls and instruments are mounted on desk.

A good rule in planning such a facility is *add a little extra room.* Be sure there will be space not only for the apparatus, but for crews to get around each piece. Firemen shouldn't have to become stoop shouldered from ducking under the ends of ladder trucks every time they have to cross the apparatus floor. In spite of the fact that wheel-bases of modern ladder trucks are being shortened, and bed-ladders seldom project out astern tc jolt the unwary, there's a tendency to place longer ladders on pumpers.

The first step is a "size-up" of the immediate and future needs of the company or companies that will or may occupy the proposed station. Be sure there will not be eventual need for housing a squad, or a tractor-ladder, or a chief's car in what present needs indicate will only require a single-door station. Most chiefs believe that any fire station should have space for at least one reserve piece of equipment.

Plan to provide as much space as possible for firemen to work around their rigs. It may not be feasible to have sufficient room to permit of removal of bed ladders out the rear of ladder trucks, but it should be possible to have sufficient clearance between units in the same bay to allow ladders to be pulled out part way, and for hose to be removed and replaced without messing up the entire floor.

Here are some other details that should be checked off:

Arrangement: Provide for free movement of apparatus (no obstructions, as previously mentioned). Sliding poles (if required) should be safely out of the way. The same for stairways, pumps, etc. Taboo the old "hose drying racks." Consider which vehicle (if more than one are housed) must be first out. If one rig should stall, how many others will it hold up?

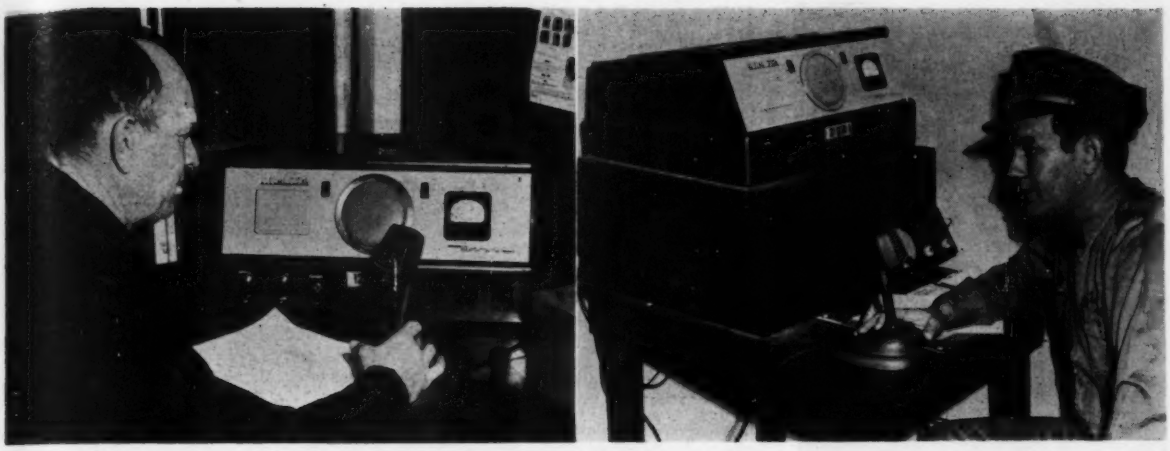
Doors: There's a tendency to increase the size of doors to have one closure for two bays. Many chiefs object to the single door because if it stalls, it blocks all egress of equipment; also, the bigger the door, the quicker the apparatus room can cool off in cold weather. Doors preferably should be the overhead, counter-balanced type. The self-closing feature is highly advisable.

Lighting: Plenty of it, with modern fixtures. Concealed or recessed, glareless, shadowless type, in fixtures easily removable for cleaning and replacement. Set-in (inlay) floor lights for lighting underside of apparatus. Some chiefs dislike modern fluorescent lighting because it is slow-acting. Add ample "convenience outlets" for trouble-lamps, use of power tools, battery chargers, etc.

Construction: Floors preferably of concrete, colored or plain; smooth finish for easy cleaning, preferably painted with waterproof cement paint. Inlays are better than painted guide lines for lining up apparatus. Floor well drained and waterproofed. Corners rounded. Construction should carry a 125 lb. minimum live load. Drain pans, if a must,

(*Continued on page* 944)

Said to be one of the first fire stations to have radiant heating, Vernon, Cal., Station 2 (Chief Lester Husted), will have warm floors to reduce colds and discomfort of firemen while lying on concrete to repair and maintain apparatus. Architects Albert C. Martin and Associates designed system in which air circulates continuously from forced air furnace through dome steel pan forms beneath floor. Temperature is regulated automatically.



Left: Typical of the 30 base stations in the Tarrant County Volunteer Fire Fighters Association radio system is this one at Saginaw, being operated by Fire Chief Reece Anderson. The entire radio station is housed in the console—transmitter, receiver and power supplies. All equipment is air-checked daily during the network roll call. Right: The desk-top base station being operated here by Lake Worth Fireman R. F. Hawrylak is a dual-frequency transmitter, with output on 46.060 mc for mutual aid work, and on 45.090 mc for Lake Worth's police cars. Built into cabinet below main station is receiver for the police channel. Four towns in the county fire association are now using these two-frequency transmitters.

Mutual Aid, Texas Style

By JORMAN I. KOSKI
Fire & Police Radio Supervisor
City of Fort Worth, Texas

TWO disastrous fires and a cold war have brought new meaning to the term "mutual aid" in North Texas.

The first fire, following a dust explosion in a rural grain elevator, resulted in heavy loss and proved the helplessness of a small community fire department to overcome a major blaze without outside help.

It also demonstrated how little fire protection was available to the rural communities in the county surrounding the city of Fort Worth, and the need for channeling this protection into a readily available mutual aid pool.

When the second big fire occurred—this time a fireworks factory which was disintegrated with a huge explosion that scattered flaming debris for hundreds of yards—the volunteer fire fighters were ready. Within minutes, 14 volunteer departments swung into action, 175 firemen using 18 pieces of equipment. For six hours they fought and extinguished 67 separate blazes kindled by the initial explosion, and they saved many thousands of dollars in fire loss.

The second fire proved the value of mutual aid, and at the same time showed up two weaknesses: need for still more community fire departments, and the urgency of better communications between scattered volunteer departments.

Time and community pride took care of the additional fire companies. The cold war (through the Federal Civil Defense Administration) gave a powerful assist in fulfilling the communications requirement.

Late in 1950, representatives of 13 volunteer departments formed the Tarrant County Volunteer Fire Fighters Association, electing Mason Lankford as its president. Under Lankford's enthusiastic leadership the association has flourished to the extent that there are now 28 active departments belonging, with the 29th now being organized.

Tying the departments into a closely-knit team is a new FM radio network of 30 base stations, 55 mobile units and 24 "Handie-Talkie" battery-powered portable radiophones, all tuned to a single frequency of 46.060 megacycles.

The Tarrant County mutual aid set-up is unique in several ways. For example, says Lankford, it is the only county-wide association of any size in which volunteer, industrial and military fire fighters are joined. Included in the Tarrant County group are firemen from Carswell Air Force Base, the Consolidated-Vultee Aircraft plant, Bell Aircraft Corporation's helicopter plant, and Fort Worth International Airport.

System Largest of Its Type in U. S.

And—typically Texas—the Association's new radio system is believed to be the largest of its type in the nation, according to Lankford. Within a short time the radio system will be strengthened further with addition of another base station 13 truck units, 5 monitor receivers for departments without base stations, and a fully-equipped mobile communications center.

The tie-in of industrial and military fire departments opens some unique equipment channels to the fire fighters. For example, the Carswell, Convair and International Airport departments can supply specialized crash trucks in case of an aircraft mishap. In addition, Bell Aircraft can lend a radio-equipped helicopter which is very valuable in co-ordinating extinguishment efforts at a far-flung blaze such as a major grass fire.

When the association first began consideration of a co-ordinated county-wide communications network, several basic approaches were discussed. One was the often-used plan of a single base station, remotely controlled by telephone circuits from the various dispatch points. However, this plan was ruled out by recurring line charges, plus the inherent

Unique among mutual aid fire systems is the Tarrant County organization, which has membership including several industrial fire departments. Discussing the radio station at the Consolidated-Vultee Aircraft Corp. plant is Plant Fire Chief C. H. Jones, standing, and President Mason Lankford of the county-wide fire fighters association.

External trumpet loudspeaker beams radio messages to pump operator, insuring solid reception when cab speaker might be drowned out by engine noise. Lake Worth Captain Don Oglesby demonstrates how pump operator can operate truck's radio from outside the vehicle. Extra loudspeaker is switched out of the radio circuit when truck is in motion.

River Oaks Fire Chief A. T. Huffines carries his "Handie-Talkie" radio phone when he takes command at a fire because the portable transmitter-receiver gives him radio communication with freedom to move around. Battery-powered portables are tuned to the county-wide fire frequency of 46.060 mc.

Halton City Fire Chief Bill Davis, left, commands one of the largest mobile fleets in the county —five radio-equipped trucks. Among the five is this emergency ambulance and rescue vehicle. Mobile transmitters are rated at 50-60 watts RF output. Shown with Chief Davis is Assistant Fire Marshal J. Q. Scribner.

danger of line failure under disaster conditions.

Locally controlled central dispatching was weighed and found impractical because of the inability of dispatchers to know in detail the geography of a 900-square-mile county. In addition, the expense of maintaining a 24-hourly paid watch at a central dispatching point was too great.

Instead, it was decided to encircle Tarrant County with a ring of low-power locally controlled base stations installed at the community fire stations, using existing water towers or other structures for antenna mounts, wherever possible.

Experience has proved the multiple-station plan to be sound, for several reasons.

First, loss of any single station does not disable the entire system, as might happen with a central dispatching station.

Second, each department takes care of its own dispatching, which requires only knowledge of local streets, rail crossings and water supplies, instead of mass compilation of these details in the office of a central fire dispatcher.

Third, bookkeeping is much simplified. With each member department operating its own base station, complicated analyses of such expenses as power, maintenance and personnel are unnecessary. Every department assumes responsibility for its own station's operation.

Fourth, the low power requirements of the base stations makes possible the use of simple stand-by electrical generating equipment—a decided advantage over a high-powered central base transmitter with associated high-power generator for stand-by power.

And finally, use of local base stations eliminates dependence on wire lines to outlying communities. In event of disaster, these lines would be highly susceptible to failure when needed most.

Licenses Granted to Association

After deciding on multiple stations, there was the problem of frequency and licensing. It was agreed to license all base stations in the name of the Association for two reasons—(a) to give the association "self-policing" disciplinary jurisdiction over the members, and (b) to simplify the problem inherent in a diverse membership, i.e., volunteer departments, industrial plants, airports, military bases, and Civil Defense centers. By the association holding the licenses, disciplinary power over all the users was possible, so that if anyone consistently violated FCC rules or the standard operating procedure, the individual station license could be revoked and the offending equipment made inoperative.

In selecting the operating frequency to be requested, consideration was given to the distances involved in county-wide coverage. It was felt that the 30-50 mc. band was most suitable. Consultation with officials of the City of Fort Worth disclosed the city was proposing to convert its existing AM Fire Radio system of three base and 68 mobile stations to FM. Further talks with the area Fire Frequency Allocations Co-ordinating Committee showed 46.060 and 46.140 mc. were available. At this point the city agreed to seek 46.140, with the Association to ask for 46.060 mc. This close spacing of channels has worked out nicely, especially in the case of supervisory vehicles equipped for dual-channel operation, permitting close liaison between key officials of city and association, yet allowing each to handle its own traffic on its own channel.

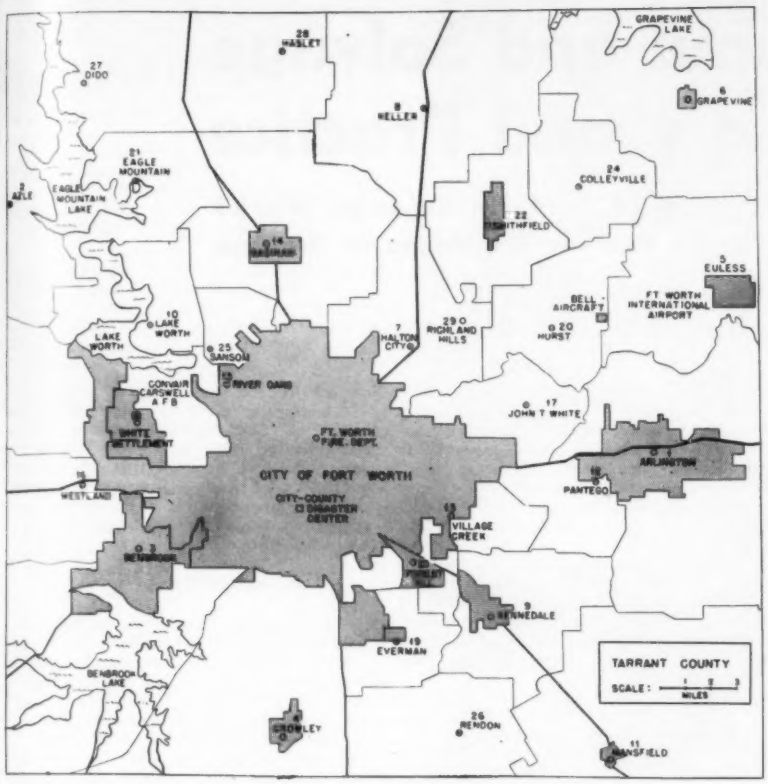
Problem of Financing

With all the details of installation, frequency and operation worked out, there was still one problem—financing the $50,000 radio system. Because of its value in disasters, half the cost was paid out of matching funds of the Federal Civil Defense Administration. To raise their half, Association officials plumbed every source of funds they could think of—the county government, benefit wrestling matches and carnivals, finally a door-to-door canvass of residents.

Motorola, successful bidder for the radio equipment, agreed to delivery on a "pay as you go" basis, and initial stations became the Association's best salesmen as the radio systems effectiveness was demonstrated. In well under a year's time the radio network progressed from an idea in President Lankford's mind to an installed-and-paid-for entity.

In day to day use, the county fire radio net follows strict operational procedure, with no horseplay tolerated. To keep conversation at a minimum, the well-known police "10 Signals" are utilized in routine messages.

Responsibility for Net Control is rotated daily, so that all member personnel become familiar with the radio operation and use of facilities. When an emergency develops in a specific area, the nearest base station assumes Net Con-



trol as soon as it is manned by qualified operators. Other stations maintain radio silence broken only if another emergency arises or if traffic vital to the initial emergency warrants. In event of a county-wide emergency, the base station located at Fort Worth-Tarrant County Control Center assumes net control functions.

Ground rules stipulate that mobiles may communicate directly with other mobiles only in the immediate vicinity of the emergency. The hand-carried "Handie-Talkie" portables are used only for communication with the vehicle of the officer-in-charge at the scene, except when requesting special equipment or giving specific instructions to newly-arrived units. This latter use becomes very important at the scene of a fire where the commanding officer must be free to move about and survey the situation from every angle. Using the battery-powered portable radiophone, this officer takes his radio with him, freeing him from any need to return to his car or truck for communication purposes.

The portable sets are particularly useful when the firemen are engaged in rescue or recovery operations following drownings.

"Co-ordinating the work of half a dozen boats is practically impossible without 2-way radio," says Lankford. The firemen have developed a standard procedure for water operations, calling for four-man crews with clearly defined duties assigned to each man. The crewman in the stern operates the outboard motor; two men amidships handle the grappling hooks, and the man up front uses the "Handie-Talkie" radiophone and directs the crew. When the drowning victim is located, two boats may work side by side in recovering the body. The radios are useful at all times when the searchboats are farther than a few yards apart.

Common frequency operation of the Tarrant County Fire network has one further advantage which any leader of a volunteer organization can appreciate. By hearing both sides of every conversation, the members share a feeling of "belonging" — a teamwork psychology which is essential to a mutual aid program. Everyone on the circuit is aware of what is happening. Departments which will respond to further alarms are alerted by radio; back-up companies receive advance notice that they may have to cover a neighboring community whose firemen are out on a call.

Thanks to the fire system, several communities have now added police radios at reduced outlay. The towns of Benbrook, Sansom Park, Richland Hills and Lake Worth paid the nominal additional cost of obtaining base station transmitters capable of output on either the 46.060 mc. fire frequency or the 45.090 mc. police frequency, the frequency change being accomplished at the flip of a switch. This dual-frequency feature appreciably lowers the cost of police radio to the community, in that a single antenna and transmitter works interchangeably on both channels. A small monitor receiver completes the talk-back circuit from police vehicles.

Effectiveness of the Tarrant County Volunteer Fire Fighters Association is perhaps best expressed by comparison of insurance rates. Eight years ago, rural homeowners paid $1.00 per $100 valuation for fire protection. Today the average rural rate in Tarrant County is down to $0.35 per $100.

Coming from unsentimental professionals in the fire insurance business, this is a high compliment to the volunteer firemen.

Queens College Announces Fire Administration Program

The School of General Studies, Queens College, Flushing, L. I., announces a Professional Program in Fire Administration for Firemen, designed to provide college level training with emphasis on problems of administration rather than fire fighting techinques.

Registration began at the College on September 12-16. Tuition fees are $14 for members of the New York Fire Department and $20 for all others. Students also pay a registration fee of $2 and a Library Service Fee of $1.00.

Courses to be offered in the fall semester of 1955 cover "Fundamentals of Fire Administration" (basic, intended for firemen interested in securing professional advancement to officer ranks), Mondays, September 19-January 9; "Fire Company Administration," Tuesdays, September 20-January 10; "Hydraulics for Firemen" (intensive course for professional firemen), Wednesdays, September 21 to January 11 and "Legal Aspects of Fire Prevention" (a study of laws and regulations pertaining to the fire service) and an advanced course in "Fundamentals of Fire Administration," the last two to be offered in the Spring of 1956.

An Advisory Committee set up for the program in Fire Administration includes, among others, Howard Barry, President, Uniformed Firemen's Association of Greater New York; Percy Bugbee, General Manager, National Fire Protection Association; William E. Clark, Captains' Representative, Uniformed Fire Officers Association, New York City; George W. Clough, Nassau County Fire Marshal; Solomon Hoberman, Director, Bureau of Training, Department of Personnel, Civil Service Commission, New York City; Edward J. MacDonald, Chief, White Plains, N. Y., Fire Department, and Fred Shepperd, Editor, FIRE ENGINEERING.

N. Y. Captains Win Suit

Six captains of the New York Fire Department were upheld by the Courts in their claim that the practice of long-term "temporary" assignments to out-of-title jobs without commensurate pay was unconstitutional.

The captains brought suit in 1953 and, when the court ruled adversely, they appealed their case. They had the aid of the Uniformed Fire Officers Association, and the Appellate Division reversed the ruling of the court. Then the former Fire Commissioner Jacob Grumet appealed to the state's highest court.

Justice Charles S. Desmond, who wrote the Court of Appeals opinion, stated that the assignment of Captains to Battalion Chiefs' duties without appropriate compensation was part of a larger "pattern." The Commissioner, the court observed, acted in good faith but allowed the practice only because the Budget Director "for reasons of economy refused to issue budget certificates necessary to authorize the Commissioner to appoint eligibles as Battalion Chiefs."

The opinion held that since the petitioners had qualified for Battalion Chiefs' positions in competitive examinations, out-of-title assignment under the circumstances involved was totally inconsistent with the whole theory of competitive civil service.

Overhaul and Salvage in Theory and Practice

Part VI—Who Should Perform Salvage Work?
The National Board's Position; The Manpower Problem

By ROI B. WOOLLEY
Assistant Editor FIRE ENGINEERING

Editor's note—Previous installments of this text dealt with the history of salvage, and salvage corps and patrols; definition and meaning of fire service salvage—the viewpoints of the fire service and the public; reasons for salvage and the complexity of modern salvage problems.

In this Chapter the author discusses further fundamentals of salvage as related to municipal fire departments, large and small, including several pertinent and debatable questions.

Inasmuch as this series will be continued until the entire subject of overhaul and salvage has been covered, the editors will welcome any observations, criticisms, suggestions, case histories, etc., that any of our readers may care to contribute.

IF the previous chapters of this study have accomplished their purpose they have established the fact that efficient salvage is as much a part of the business of fire fighting as getting water on the fire.

The former Chief D. W. Brosnan, whose record as head of the Albany, Ga., Fire Department still remains something for others to emulate, used to say "Time was when the one activity, or major duty of the fire department, was the extinguishment of fires. Firemen sat around the engine houses awaiting an alarm, and then attempted to extinguish the fire as best they could, in many cases using large quantities of water that did more property damage than the actual fire itself.

"Today, (this was over 25 years ago, remember), the fire department has three major functions. The first of these is fire prevention, which if properly applied, covers public safety in all of its ramifications. Second, extinguishment. Intelligent extinguishment, with an eye single at all times to conservation of the loss. Third, salvage of property, during and after the fire."

Not every fire officer will agree with Chief Brosnan, but there are few who will question the value and the wisdom of fire forces carrying on salvage operations. As we have said before, it is apparently "good business" both for the fire service, and for the interests it protects and serves.

The only questions apparently in the minds of students of the subject are: (a) Who is going to do the salvage work; (b) Who is going to finance it? Two pretty important questions, these days of depreciated fire budgets—and fire crews.

Several times during the past decade FIRE ENGINEERING has queried represtative groups of municipalities on fundamental questions relating to salvage and salvage operations. One of the questions asked was "Does your department perform salvage work at fires as a regular activity?"

Taking large and medium sized cities, not presently operating underwriter's salvage corps, over 90 per cent of the respondents stated they did salvage work. Only a relatively few said they did not do so. However, a number reported they performed salvage under difficulties, chief of which was shortage of manpower. This, some said, limited their salvage operations. Typical of the reports received are these excerpts:

"A regular part of our department activities" . . . "Salvage work is a regular activity" . . . "It (salvage) is standard procedure here in this fire department." . . . "It is a definite practice and rule in our department to include salvage operations in the extinguishment of any kind of fire."

Separate from the fire department but integrated with it. The Kansas City, Mo., Fire Insurance Patrol, Chief William Gardner, headquarters of which is shown here, is an example of extreme specialization in salvage. Not many of these individual salvage corps are left today, as the nation's fire departments take over salvage operations.

The Underwriter's Viewpoint

As was pointed out in the earlier chapters on the historical background of fire service salvage, this essential function had its beginning in the field of insurance underwriting. Originally salvage was not a fire department operation per se, but was carried on as a separate, or collateral entity. And in this country, that effort was put forth by the National Board of Fire Underwriters which still is a bit more than godfather to some half dozen individual underwriter salvage corps and patrols.

Some time ago, however, the National Board rendered a decision that it would no longer install salvage corps in cities, as it believed such work is essentially a fire department operation and, therefore, salvage companies (if such were maintained) should be installed and maintained by municipalities. The Board went further, and urged the acceptance of the responsibility for salvage operations by fire departments everywhere throughout the nation.

The Board contended that in cities having salvage corps operated by insurance companies, the cost of the installation and maintenance is charged to the insuring public, while the uninsured derive equal benefits from the service. Inasmuch as insurance rates are predicated upon losses, and other fire operations are under municipal control, the logic of the Board's contention is apparent.

Since that time the number of insurance and underwriter-operated salvage units has steadily decreased; but, fortunately for the fire service, and the nation, the functions of good salvage have not been allowed to disintegrate and, in every city where the old underwriter's salvage corps or patrol formerly functioned, the fire service has taken on that responsibility and, it may be said, with generally good results.

It is freely predicted by those close to the problem that the number of underwriter owned and/or controlled salvage corps and patrols will continue to decline, their functions gradually being absorbed by the municipal fire service. Whether, under these circumstances, the facilities will be maintained as separate, individual units, or whether they will lose their identity and individuality, as

has happened in some cities, only time will tell.

Here, too, the matter of financing salvage operations has a direct bearing on the outcome. At the present time, many students of the problem who favor the individual unit, specializing in salvage work, whether maintained and directed by the fire department, or an outside interest, admit, privately at least, that the prime obstacle in the way of the specialized salvage set-up is that of cost.

In an earlier Chapter, we pointed out that the idea of salvage as an essential fire fighting function had not been 'sold' to the public generally. This situation is reflected in the makeup of municipal fire department budgets which, in the majority of cases, do not recognize the function of salvage, or if they do, give it only lip service.

Separate and Detached Salvage Units

To reiterate, the question is not, should a fire department perform salvage work, but rather, **how best can this be done.** In short, should it operate separately, detached salvage unit, or units, or should it delegate the task to the existing fire forces.

One of the nation's leading salvage authorities, Chief Frank C. McAuliffe, head of the Chicago Fire Insurance Patrols, has expressed himself on the subject in this fashion.

"Cities which contemplate establishing companies exclusively for salvage operations in their fire department should make a complete survey to determine the the values and particular hazards within their coorporate limits. From a purely practical standpoint, the installation of a separate salvage company is not generally justified unless it is apparent that it can produce in actual salvage a comfortable margin above its cost of operation. It must be understood that salvage operations are not necessary in the saving of life or controlling of fires.

"However, salvage is recognized as an operating responsibility and therefore considered very essential in fire department operations. In order to minimize damage to property as a result of fire-fighting operations, the fire departments in many of our large cities, as well as in many of the smaller cities and towns, have equipped their fire apparatus with salvage covers and numerous other salvage appliances. This procedure provides some salvage protection for the entire area of a municipality; it has proved to be efficient, more economical and effective, as compared with the installation and operation of a separate salvage company in the fire department, which can render salvage service only within a specified district of limited area."

Chief McAuliffe, and other salvage authorities, advocate that salvage covers should be carried on pumper and ladder units of fire departments and that one, preferably the latter, should in addition, be equipped with salvage tools and equipment such as squeegees, brooms, shovels, sprinklers and sprinkler stops, tarpaper, sawdust, hammer and nails and such other salvage equipment as may be found necessary from actual experience.

Studies of salvage customs and operations by fire departments (previously mentioned), indicate that this practice is being followed very generally in most progressive departments. The practice may not be followed throughout the entire country, but it is generally accepted premise that some fire department unit-pumper, ladder truck, rescue or emergency unit—should be able to produce at least a couple of salvage covers at every fire, or upon every first alarm response. In short, it should not be necessary to special-call salvage units except in instantces where extra salvage facilities are needed. By having a minimum of two or more covers on every major fire rig responding to fires, large scale or multiple alarm incidents will see practically all the necessary additional salvage equipment rolling in, which the seriousness of the occasion warrants.

Of course, where a separate, detached salvage company is established, in addition to response to first alarms within its immediate running district, it should also respond to all second alarms and special calls throughout the area covered

Salvage equipment finds a place in modern emergency and rescue apparatus in paid and volunteer fire departments. Top: Wide range of equipment, which includes salvage covers and other essentials, is illustrated by this bird's-eye view of a late unit of the York, Pa., Fire Department. Center: Many departments boast of special auxiliary units, similar to this car of the Buffalo, N. Y., Fire Department, which it will be noted, is well stocked with salvage utilities. Bottom: Let it not be said that volunteer departments do not possess special units. This Silver Springs, Md., salvage and rescue truck carries a large inventory of salvage and rescue facilities—and has seen hard service.

* "Fire Department Salvage Operations. 1954 ed.; Pub. by the National Board of Underwriters.

Any city can encounter a situation such as did Lansing, Mich., in this epochal state office building fire, which called for salvage operations beyond the facilities of the local fire forces. Here covers were recruited from outside departments and industrial, commercial and mercantile interests. And it took manpower, as well, to help reduce the water loss.

by the department and provide salvage service.

If, for any reason, it is not possible to equip all major units of a fire department with salvage covers and other equipment, then provision should be made to provide such facilities in the quickest possible manner—even, some chiefs believe, if it calls for the special response of regulation fire fighting equipment, which might carry some or all of the desired salvage equipment.

Special and Combination Salvage Apparatus

A custom being adopted by a widening number of fire departments is to maintain a small utility or emergency truck carrying a stock of up to 20 or more covers, together with various essential salvage tools. This unit may normally be kept in reserve in a high value district, but it can be quickly brought to the scene when needed, and it can be useful in after-fire operations, such as picking up and distributing covers, etc.

In the hands of capable, experienced men, this equipment can fill a real need in effectuating salvage. Of course the personnel in charge of the unit should preferably be reinforced by a detail from other fire companies, particularly where difficult roof work or extensive cover-up is needed at fires.

Such a piece of equipment should be fitted with, or have ready access to, portable generators, and de-watering equipment, power tools, lighting equipment of all kinds, deodorizing and other special facilities.

It goes without saying that all personnel, particularly officer personnel, of a fire department, should be familiar with the type of such salvage unit, and equipment carried; where it is kept; how it may be summoned; and conditions under which it is operated.

It is encouraging to note that many cities, towns and villages which maintain emergency and/or rescue apparatus include salvage covers; and possibly other salvage equipment.. Studies by FIRE ENGINEERING indicate that many municipalities are organizing combined rescue and salvage units, which perform an essential twofold duty. It is also disclosed that even where the "emergency" unit may be an ambulance, one or more covers are being carried for quick use.

Salvages and Mutual Aid

Another development that is finding wide acceptance is the equipping of "disaster," rescue, or other special emergency vehicles maintained by counties or groups of municipalities as a unit in a mutual aid plan, with a general supply of salvage covers. Such units, which can respond on normally multiple alarms over a wide area, need not have a large crew to perform salvage work, providing the personnel of the fire forces of the area are properly trained in salvage operations, and are available to make the best possible use of the equipment carried by the disaster unit. Of course such covers, belonging to no department in particular, should bear proper identification marks. The necessary arrangements to not only use but to pick-up, clean, dry and restore used covers to 'in-service' status should be predetermined.

Another thought might be introduced at this point. Mutual aid plans and programs seldom are concerned with such details as salvage. For the most part, they are designed to provide reinforcements of primary fire apparatus, such as pumping and rescue equipment. Nevertheless, the elements of salvage may enter into large scale emergencies; therefore the salvage facilities of the fire forces in the mutual aid area should be inventoried and listed, and made available to all departments therein, as well as to the control centers or other communications headquarters. Even if a few extra covers are stored in some available place, not on apparatus but available to be picked up ready for use, it may be possible to load them on any conveyance and transport them to the scene of the emergency without too great delay, should they be required.

With the building up of suburban—and rural areas, having vast mercantile establishments, apartments—even industries, any serious fire may create a situation calling for extensive salvage that cannot be met even by the combined facilities of several fire departments. Having a reserve storage of covers, therefore, may spell the difference between a partial and a very serious or total loss.

In this connection, one cannot over-

Photos courtesy Cincinnati, Ohio, Underwriters Salvage Corps

Salvage should have its available reserves no less than fire fighting. Here the professionals of the Cincinnati Salvage Corps manhandle covers following a multiple alarm blaze.

look the great assistance provided by two-way radio, which is rapidly becoming accepted throughout fire departments, large and small.

Before radio communications were established, fire and salvage companies were "lost" to fire headquarters, once they left quarters. And no chief liked to have his units leave quarters except for what were believed actual fires or other emergencies. As for traveling to fix a sprinkler leak, or a ruptured sprinkler head, or dewater a basement, it either wasn't done, or if so, was done under protest. And it was the rule generally, that apparatus and company units were to return to quarters with least possible delay. The result was that frequently overhauling and salvage (where done at all) was rushed or otherwise slighted. Rekindles, or re-ignitions were more common, and more disastrous.

Today, radio maintains constant communications between forces performing salvage, and fire headquarters. Thus, if there is but one "salvage unit" in a municipality, it can readily be dispatched from one fire to another, thereby immeasurably extending its scope of usefulness. If it carries plenty of equipment, it can leave one or two men with some facilities at the first fire, and "cover," the second emergency with the balance of the crew, or with a pick-up squad recruited following the second call.

Radio has now made it possible for companies to remain out of their quarters for inspections, drills and other details, and still be available for service in any place in their districts. Thus, salvage companies, or details, can remain in service after a fire and assist victims in salvaging their property, and help them return to their homes or places of business with least delay.

The Manpower Question

Salvage is not one of those jobs that can be left to itself. Nor is it something that can be mechanized. Automation, that latest entry into the realm of 'efficiency'—as American business is coming to regard it, is out of the question. In brief, it takes men to perform efficient salvage operations.

It is on this rock that some of the best laid plans of the fire service have foundered. Through the years, fire chiefs who have weighed the question of salvage operations and found it not to their liking, have had at least one patent excuse: we haven't the manpower.

Photo courtesy Worcester Protective Department

The professional salvage corpsman has to know something about covers besides spreading them. Not all fire departments doing salvage work go as far as this to repair covers, as Worcester, Mass., Protective patrolmen are doing with this "boot machine," but it's a big asset to have men and equipment to do the job.

Let's see what some of our authorities have to say on this question. Here is what Frank McAuliffe writes(†): "Many fire chiefs are content that they do not have sufficient men to do cover work. A careful analysis will reveal that the first five minutes at a fire requires the concentrated effort of every available man in stretching lines, ventilating and ladder work. After the first five minutes you will find many available for other duties. It is not unusual to see at large fires, particularly where towers and turrets have been placed in service, whole companies of men idle and awaiting orders. Even in the small communities, after water is at the pipe a few men can be spared to do cover work. Water, particularly if directed at fires, is vaporized and absorbed to some extent and with ceilings and floors holding the remaining water temporarily, much advantageous cover work can be performed as men become available for the purpose."

It may be said that this is hardly a fair picture of the overall problem of manpower, because Chief McAuliffe is basing his beliefs on the second largest city—and fire department, in the nation. Well, let's quote a small city fire department authority—two in fact††:

"Many fire chiefs have the impression that salvage work is only for the large city department; that because their departments are small they cannot spare men to do extensive salvage; and, in a few isolated cases this is undoubtedly true. There are naturally occasions with every fire department where all available men are needed in saving lives and extinguishing fire, or in preventing its spread. At these times covering and similar salvage work must be suspended temporaily.

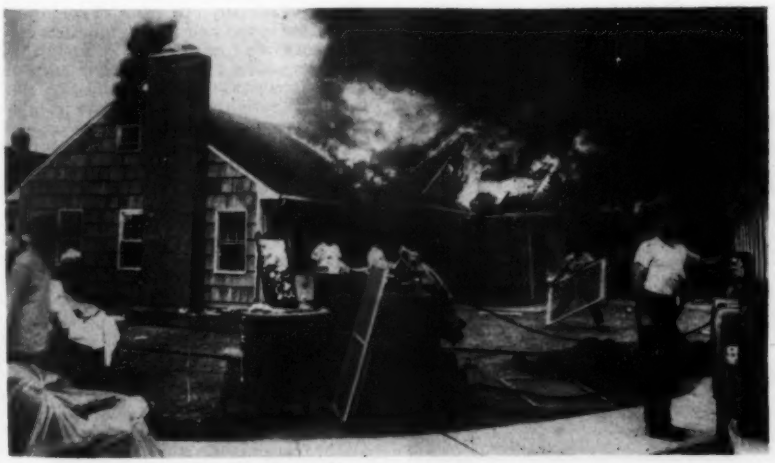
"Upon studying the situation, it has surprised many chiefs that once the lines were in operation, firemen could be found available to place covers and carry out other salvage needs in a large percentage of fires, even going ones. Ceilings and floors will hold much water for a short time, hence effective salvage work can still be done in five minutes or twenty minutes as firemen become available from the lines. Even the smallest departments can do salvage on this basis. In fact, some of the best salvage work in the state (Iowa) is being done by small volunteer departments."

Another authority previously mentioned in this text, Chief D. W. Brosnan of Albany, Ga., some years ago started quite a controversy (1933 Con-

† Salvage. By Frank C. McAuliffe, Chief Chicago Fire Insurance Patrols. Published by National Board of Fire Underwriters, 1932 ed.

†† Pratical Salvage Suggestions for the Fire Department, by Daniel H. Shire and Lindon J. Murphy, Iowa State College, Ames, Ia.

(*Continued on page 943*)



Given the manpower, and experienced supervision, volunteer fire fighters—and even the public—can perform salvage, as witness operations at this Berea, Ohio, home.

New York City's
Pilot Campaign Proves

False Alarms Can Be Reduced

First Comprehensive National Effort to End Evil Starts; Education Plus Enforcement Motivates Manhattan Tests

A STAFF REPORT

Editor's Note: **At its Houston, Tex., Conference last year, the Board of Directors of the International Association of Fire Chiefs approved a nationwide campaign to reduce the number of false alarms.**

At the same time, the Association accepted the recommendations of its Committe on Communications, headed by the author of this report, that special sub-committees be appointed to direct and effectuate the false alarm drive and the whole placed under the direction of Thomas P. O'Brien, Deputy Chief in Charge, Bureau of Fire Communications, New York Fire Department.

This was done, and the following Sub-Committees appointed:

***Sub-Committee on Nomenclature and Terminology*—Chief Lewis A. Marshall, Providence, R. I., Chairman; George Swan, Asst. Engineer, National Board of Fire Underwriters; George Richardson, Secy.-Treas. International Association of Fire Fighters and Warren Y. Kimball, National Fire Protection Association.**

***Sub-Committee on Legal and Jurisdictional Phases*—Chief Stuart Potter, Greenwich, Conn., Chairman; Chief Robert Bogen, Baton Rouge, La.; Chief Joseph Giammatteo, Glen Echo, Md., and Chief Wayne Swanson (V. Pres. I.A.F.C.), Rockfield, Ill.**

***Sub-Committee on Research and Survey*—Chief Forrest Lucas, Dayton, Ohio, Chairman; Chief Edward MacDonald, White Plains, N. Y.; Chief Eugene Fields, Omaha, Neb., and Chief Fred Wells (formerly of Fargo, N. D.).**

This drive got under way in the Spring of 1955 and was spotlighted by a "pilot" false alarm campaign inaugurated by the New York Fire Department under its Fire Commissioner, Edward F. Cavanagh, Jr., and Deputy Chief Thomas O'Brien. to determine certain basic facts essential to the establishment of any country-wide effort.

The results of this trial program were surprising, so much so that, to quote Commissioner Cavanagh, "the procedures which effected this achievement in the East Harlem area have been extended to sections of Brooklyn and the Bronx."

This special report covers the fundamentals of this experiment. An elaboration of the report will be delivered to the International Association of Fire Chiefs at its forthcoming Conference by the committee chairman R. B. Woolley.

The editors are grateful to the I.A.F.C., through its Committee on Communications and its several before-mentioned Sub-Committees, as well as to the New York Fire epartment for the facts concerning the latter's "pilot" effort.

It is the hope of the author, and the I.A.F.C. Committees, concerned with reducing the calamitous number of false alarms in this country, that fire forces everywhere will apply the principles and ideas advanced in this report to solving their own local false alarm problems.

EVER since the advent of the public street fire alarm system, malicious false alarms have been a serious threat to the fire service, both permanent and volunteer. Many fire officers consider the false alarm evil the worst blot on the escutcheon of the service.

At various times in the past half century, the International Association of Fire Chiefs has recognized this evil and has recommended that something be done to correct it.

Review of the history of such efforts, however, fails to disclose any very serious or comprehensive national endeavor to that end. Such attempts to reduce the number of false alarms as were tried were, for the most part, local in extent and of sporadic nature—not persisted in for any length of time, and ineffectual as a consequence.

It is not the purpose of this study to attempt to analyze the failures of most of those efforts, for most of them fell far short of their mark, except to point out that the majority failed at the outset because they were predicated upon a misinterpretation, or a lack of clear interpretation, of what constitutes a false alarm.

This fact, together with such other handicaps as public (and in some cases fire service) indifference; lack of cooperation between civic and public authorities and groups with the fire department; lack of appreciation of the gravity of the problem by the courts; absence of laws and ordinances under which suitable punishment of perpetrators could be meted out; difficulty of apprehending culprits; and even more important, difficulty of convicting those who were apprehended, have thus far discouraged any serious effort on a broad scale to curb the trouble.

Tragedy of the false alarm. Lifeless form of little girl lies on pavement following collision between private car and aerial responding to false alarm.

Meanwhile, more fire fighters and civilians continue to be killed or injured, more apparatus wrecked, and fire suppression activities made more complicated, because of the increasing number of false alarms, both by telephone and municipal alarm box system.

Measured in terms of economic loss to municipal government, these false calls are a serious drain on the treasury. They also constitute a direct threat to Fire Fighters and to fire control operations, as every chief knows. Any way you view them, they are "bad business" for fire service.

Recently, the question of false alarms has been related to certain systems of fire alarm communications, with emphasis on municipal street alarm boxes, to the detriment of the latter.

The controversy over one type of fire alarm transmission system, as compared with another, has involved the taxpayers, as well as the officials of many municipalities, and the fire service in con-

flict, confusion and general misunderstanding. This situation has worsened as well-intentioned, but misguided and misinformed persons (some of them within the fire service itself) have advocated drastic and costly changes in the long-established fire department communications system, some of which "cures" cannot by the fondest stretch of the imagination hope to eliminate the false alarm evil, but which can constitute a serious potential hazard to fire department operations if carried out as advocated.

Fire forces of every city, town, village or hamlet are today encountering increasing obstacles to their prompt response to emergency calls. The mileage of travel is continually on the increase and, with it, the danger of highway collisions and other accidents to apparatus and firemen. The percentage of false calls being answered by fire forces likewise has shown alarming increases in some areas and has been the direct cause of not only traffic accidents, which have resulted in death and injury to fire fighters and citizens, but has further intensified the nation's traffic blocks and confusion.

As one leading fire chief expresses it: "It is hard enough on fire fighters today responding to and returning from legitimate calls for assistance without having to run the added hazard of additional maliciously transmitted false calls."

Recognizing the seriousness of the situation, the International Association of Fire Chiefs gave its Committee on Communications the green light to set up additional sub-committees which would study the whole false-alarm problem, and come up with specific recommendations. The Association's Board of Directors fully appreciate that any comprehensive effort to achieve material reduction in false alarms (most authorities admit the Utopia of "no false calls" can never be realized), must be a continuing effort.

The objectives of the enterprise have been clearly defined, and the appropriate I.A.F.C. sub-committees formed, as has been explained. An important detail of this set-up which may escape the casual reader is the fact that represented on the groups are all the prominent organizations directly and closely concerned with fire prevention and protection in this country. This includes, in addition to the I.A.F.C., of course, the National Board of Fire Underwriters, the National Fire Protection Association and the International Association of Fire Fighters. It should be explained here that another important organization, the International Municipal Signal Association, is represented through the general chairman of the False Alarm Campaign, Chief Thomas O'Brien, who is an official in the I.M.S.A.

In addition, various other consulting and cooperating agencies will play a part in the continuing effort. These will include fire schools and colleges; manufacturers of fire service communications; police and sheriff's organizations; municipal administrative groups, etc.

Aims and Objectives

The aims and objectives of the enterprise as set forth and approved by the I.A.F.C., are about as follows:

1. To establish a proper definition of a "False Alarm" and the method of determining what constitutes a "False Alarm." At present the term "False Alarm" covers everything from alarms transmitted with malicious intent to and including those labelled "unnecessary," "needless," "good intent," "mistaken," etc.

At present there is no standard definition or terminology nor is there any uniform classification of such alarms. Nor is there unanimity of opinion between fire chiefs, signalmen and others concerned with the problem of fire service communications responsible for classifying and tabulating such alarms.

The first action in the Association's drive, therefore, should be to study the nomenclature and the determination of an accepted definition, or definitions, not only of what costitutes a "Malicious False Alarm" but alarms in all essential categories—box, telephone, verbal, etc.

It is essential, said the Committee on Communications, that all parties and interests in, and allied with the fire service be in agreement on these definitions and nomenclature. If the drive accomplished no more than this single aim, the Committee believes the effort would be well worth while.

2. Before any remedial measures to correct the false alarm evil can be prepared and adopted, it is also essential to clearly determine the underlying causes of false alarms; those elements, physical, mental, psychological or otherwise, which motivate persons responsible for false alarms. Naturally, particular attention should be given the type of alarms termed "malicious" and those who perpetrate them.

This will entail considerable research, which is one of the reasons for the Sub-Committee on Research and Analysis. Some of these essential data have already been secured. They throw considerable light on such questions as *who turns in false alarms* (the human element)?; *when are false alarms sounded* (the time element); *where are they the most common* (the geographical element); what impels the sender to transmit a false alarm (causes and reasons), etc.

Out of the mass of basic data assembled and analyzed by the several sub-committees — and the trial campaigns now under way—will come a final planned campaign which it is hoped will find its way into every political sub-division of the nation, just as has "Fire Prevention Week."

New York Conducts "Pilot" Campaign

The City of New York did not wait for a national program to reduce the

number of false alarms. It had already determined certain fundamental facts on the subject and its Fire Commissioner, Edward F. Cavanagh, Jr., instructed Chief O'Brien to go ahead along lines laid down by the Bureau of Fire Communications and other departmental interests who were "in" on the drive.

In passing, it might be recorded that in New York City there are between 10,000 and 15,000 false alarms turned in annually from all sources. In 1951 there were 36,000 box alarms turned in, of which 13,150 were false. The figures or 1953 showed the same trend. In what is known as the Twelfth Battalion District, there are about 100 a month.

The Fire Departments Bureau of Fire Communications produced figures to show that there is a definite pattern to these false alarms. Its researches showed that they occur mostly during the hours between noon and 1:00 P.M. and 3:00 P.M. and 10 P.M. The Department has long been of the opinion that many false alarms are turned in by children and youths of school age (a belief that has been definitely substantiated). "It may be more than a coincidence," said the department, "that the incidence of false alarms is highest during the out-of-school hours of children."

The departmental statisticians and researchers of the Bureau of Fire Communications came up with data to show what false alarms were costing the city heavily in man-hours of work lost; accidents (even death) to fire fighters; miles of unnecessary travel (with resultant added costs for fuel, lubrication, wear and tear on apparatus, etc.). Although accurate figures on the cost per false alarm could not be set down, the cost could definitely be related to accidents to men and equipment, in addition to operating expenses and wear and tear on equipment.

The pertinent data bearing upon the above were prepared by the Bureau with graphic charts showing the number of false alarms per each fire box; location; the time of day they originated; the relation of each box from which false alarms were received to proximity of public and parochial schools, and related data.

As a result of the information analyzed, it was believed that the initial start of any campaign to reduce the number of false alarms should begin with and be carried out through the schools. This entailed the cooperation of the Board of Education, which was gladly offered.

An Elementary School Committee on False Alarms was set up following a meeting on March 23, 1954, at the office of Assistant Superintendent of Schools Dr. Clare C. Baldwin. Present, in addition to representatives of the fire department, were officials from the Bureau of Curriculum Research, and 11 Principals of Schools in Districts 10 and 11.

Participants in the planning, once having studied the data submitted by the fire department, were quick to realize the moral, ethical and character building aspects of the problem, and were unanimous in feeling that the schools should effectuate a constructive approach curriculum-wise, in helping reduce the number of false alarms.

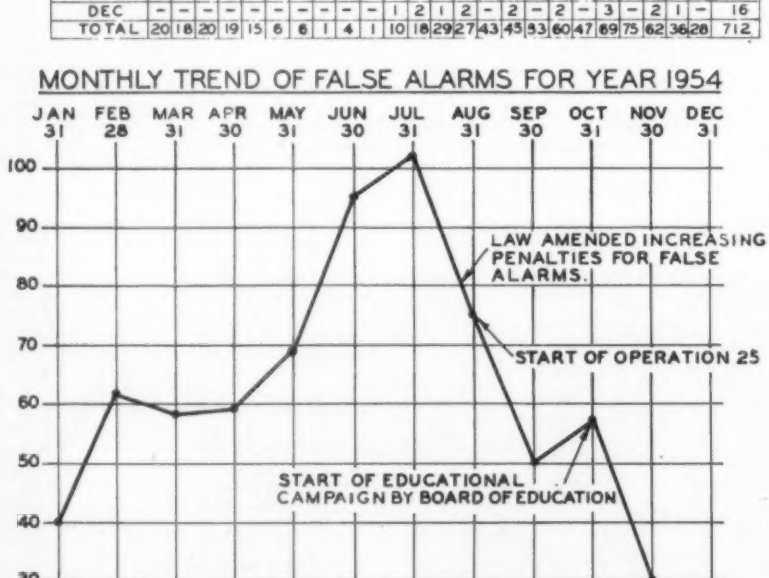
The Committee soon discovered that there was virtually no material available in the limited area of false alarms, and that it would be necessary to make original contributions. It was decided to include in the program material dealing with various areas of fire prevention.

The Committee, following its first meeting on April 9, 1954, prepared complete suggestions for school-wide and community programs under the aegis of school supervisors; resource units covering all grades, and suitable leads of integration with social studies. The program includes also original stories for Kindergarten classes; a bibliography of reading material available in the District Library, and at the Board of Education Library; a list of films on fire safety; a unit prepared for the Second Grade; suggestions for forums and fact sheets, etc.

The fire department and the committee concentrated their study on the Twelfth Battalion District which it was agreed would be the "pilot" district for the initial tryout of the vigorous educational campaign. Meanwhile, through the appeals of Fire Commisioner Cavanagh, some city magistrates had upped the fines for sending false alarms, and the initial instances of conviction ran all the way up to one year in jail and fines of $1,000. While it was hoped this would have a salutary effect on *adult* false-alarm senders, fire fighters were not so sanguine about its effect on the small fry.

MONTHLY AND HOURLY SUMMARY OF FALSE ALARMS FROM STREET BOXES IN EDUCATIONAL CAMPAIGN PILOT AREA OF MANHATTAN EAST OF 5TH AVE AND NORTH OF 96TH ST YEAR 1954

	MIDNIGHT						A M						NOON						P M						MIDNIGHT				TOTAL
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
JAN	1	-	-	2	2	3	-	-	-	-	-	-	1	2	-	1	3	3	5	4	4	3	1	2	3	40
FEB	3	1	-	2	-	-	-	-	-	-	-	1	8	1	4	5	6	5	2	4	11	4	3	1		61
MAR	2	2	1	3	1	1	-	-	-	-	-	-	8	-	2	6	3	5	7	4	3	6	3	3		58
APR	-	1	1	-	2	-	-	-	-	-	1	2	2	4	5	1	6	5	1	5	12	3	4	4		59
MAY	4	-	2	1	-	1	3	-	1	-	-	1	1	1	5	5	5	4	6	5	9	11	2	2		69
JUN	1	2	4	4	3	-	2	1	1	-	-	4	2	4	8	4	9	5	7	11	8	8	3	4		95
JUL	6	5	4	3	4	1	-	-	-	1	3	2	-	8	4	6	3	8	5	9	9	8	8	5		102
AUG	-	4	1	-	2	-	1	-	-	-	2	2	1	3	4	6	6	5	8	7	8	6	7	2		75
SEP	1	1	2	-	-	-	-	-	1	-	2	2	2	2	2	4	5	2	12	5	2	1	2			50
OCT	-	1	3	3	1	-	-	-	1	-	1	1	2	2	6	3	6	6	5	3	4	7	1	1		57
NOV	2	1	2	1	-	-	-	-	-	-	-	-	2	-	2	2	2	5	-	2	3	4	1	1		30
DEC	-	-	-	-	-	-	-	-	-	-	1	2	1	2	-	2	-	2	-	3	-	2	1	-		16
TOTAL	20	18	20	19	15	6	6	1	4	1	10	18	29	27	43	45	53	60	47	69	75	62	36	28		712



Aims and Objectives

The general aim of the campaign, as established by the Committee, was to instill in children an awareness of their responsibility as citizens in a community in regard to fire safety. Specifically, these were the objectives:

1. To teach the importance of fire prevention in the home, school and community.
2. To teach the purpose and use of a fire alarm box.
3. To develop an understanding of the dangers of false fire alarms.
4. To help reduce the incidence of false fire alarms.
5. Through the children to educate parents.

The "Suitable *Approaches*" to the problem include

A. Discussion:

1. What is the fire safety quotient of our home, our school and our community?
2. What can we do to prevent fires?
3. When should an alarm be turned in?
4. How should an alarm be turned in?
5. What fire fighting equipment does the fire department use?

Deputy Chief Thomas O'Brien and Fire Commissioner Edward F. Cavanagh, Jr., kicking off false alarm campaign.

6. Who pays for the purchase and upkeep of this fire fighting equipment?
7. What is a false alarm?
8. Why are false alarms dangerous?

B. READING:

1. *The Little Boy Who Called Wolf.* Aesop's Fables—For all grades.
2. *Fireman.* Eleanor Johnson — for grades 1-2-3.
3. *The Fireman.* Paul Witty — for grades 1-2-3-4.
4. Original stories by teachers — all grades.

C. VISUAL AIDES:

1. Display of pictures and fire-prevention posters.
2. Films and film strips.

D. TRIPS:

1. Fire College, 48-34 35th Ave., L. I. City; Museum of Fire Dept.
2. Museum of the City of New York. Early N. Y. C. fire apparatus, 103rd St. and 5th Ave.
3. A local fire house.

In line with the foregoing, a list of some 35 suggested projects was prepared to cover the various curriculum areas and grade levels. Here the experience and facilities of the Board of Education were most helpful in cooperating with the fire department.

The Battalion District selected for the initial experiment is a busy one. It covers a broad area in Manhattan bounded by Fifth Ave. on the North; 96th St. on the West, and the Harlem and East Rivers on the East and South. The district is heavily populated and has some 32 public and parochial schools. The area has been the scene of many serious fires as well as having a high incidence of false alarms, with consequent loss of life and limb.

Some Details of the Program

After determining the 'pilot' area and plotting the curriculum and agenda, appeals were sent to all school principals and teachers urging cooperation with the fire department in the "long range program." In this appeal, over the signature of the Assistant Superintendent of Schools, John B. King, it was pointed out that the attack on the problem is considered a vital and worthwhile curriculum experiment.

A complete presentation of "Curriculum Suggestions" was prepared and distributed under the direction of Dr. Clare C. Baldwin, Assistant Superintendent of Schools. Also, a *"Teaching Guide for District Project on Fire Safety in District 26"* was prepared by Mr. King and distributed later. Another high point of the campaign was a colorful and dramatic folder or brochure, which was distributed to students and their parents. This printed piece was captioned *"Firemen Work to Protect Your Life and Home—You Can Help! Never Send in a False Alarm."* Its six pages pictured youngsters turning in a false alarm; the smashup of apparatus responding to the false call; a fireman lecturing the children, and concluded with a few pertinent facts about fires in the nation and the City.

One thing the committee of teachers and supervisors in the District emphasized was the need for a *positive approach* throughout its consideration of the program. Educators were emphatic in this detail — a point often overlooked by the fire service in attempting to educate and train children. Said Mr. King: "Experiments in other large cities . . . have shown that the use of a negative approach, with its emphasis on 'Don'ts' resulted in a marked increase in false fire alarms. Any program, characterized by a concentrated effort for a short period, has had the same negative effects."

The *Teaching Guide,* which is being sent out to educators and supervisors about this time, says this: ". . . In at least three other areas in New York City where a positive approach has been used experimentally, results have been most encouraging. In one area, false fire alarms were reduced from 110 per month to 6." And it added: "Such an approach involves the inculcation of favorable attitudes and appreciations through many meaningful experiences in all the curriculum areas over a long period. As opportunities occur as part of the regular instructional program, teachers will plan to include the learning experiences necessary to develop desirable concepts related to the firemen, fire safety, community life and social responsibility.

According to the plan, the schools were appraised each month of the number and location of false alarms so that they could evaluate the effectiveness of their program. This also brought about a desirable rivalry of competition between schools to reduce the number of false fire alarms.

Personnel of the fire department augmented the program by visiting the school personnel, and this cooperation resulted in classes being taken to visit the fire stations and fire alarm boxes. In short, the personal contact—always cooperative—was maintained throughout the effort. The printed folder, previously mentioned, tied in well with these personal visits.

Supplementing the personal contact also, was the display of graphic and other material recording the month-by-month progress of the drive. In this connection, it must be realized that school officials as well as students require personal contact with Fire Forces and must have their "mental batteries re-charged." Incidentally, and deservedly so, they appreciate acknowledgement of work well done.

These are merely some of the highlights of the program. How has it gone? We have already given some indication. Other data supplied by the Bureau of Fire Communications make interesting reading. Here is a comparison of figures for the past three (3) years (dated August 5, 1955) by the Department's Analytical Unit to Chief O'Brien:

	7 mos. 1953	7 mos. 1954	7 mos. 1955
Fires	44,596	51,421	57,749
False alarms	8,968	7,670	5,951
Emergencies	3,033	3,584	4,264

This indicates a reduction of 1719 (22%) False Alarms in comparison with 1954 and a reduction of 2747 (30%) when compared with 1953. "Since February 1954, our records," said the report, "indicate a decrease every month. This consistent decrease is being maintained because of the splendid cooperation of the Board of Education, the Courts and the Police Department."

An impressive result of the effort, according to fire department officials, has been the change in the picture of the fire department and false alarms conjured up by the students in the areas of the trial effort. Formerly it was quite evident that the average school boy or girl had no conception of the seriousnes of a false alarm or of the far-reaching effects of such a call upon the fire fighters. If the campaign did little more than accomplishing this changed viewpoint, officials believe it will have been well worth while.

July Fire Losses

Estimated fire losses in the United States during July amounted to $61,614,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $61,614,000 loss represents a decrease of 11 per cent over losses of $69,532,000 reported for July, 1954, and a decrease of 13 per cent from losses of $70,828,000 for last June (1955).

Losses for the first seven months of 1955 now total $531,371,000, an increase of 1.1 per cent over the first seven months of 1954, when they amounted to $525,522,000.

These estimated losses include an allowance for uninsured and unreported losses.

New Station for Fullerton

Plans have been ordered drawn by the City Council for Fullerton, California's third fire station.

The station will be located on the east side of Acacia Ave. near Ross Ave. on a one-acre site. It will house a 1250-g.p.m. pumper with a four man crew.

Negotiations are underway to obtain a site for a fourth station near the new St. Jude Hospital site.

Fullerton is located in Orange County east of Los Angeles.

CLIFF DEKTAR

Baltimore County Inaugurates Elaborate Training Center

New Facility Includes Fire Headquarters and Civil Defense Control Center

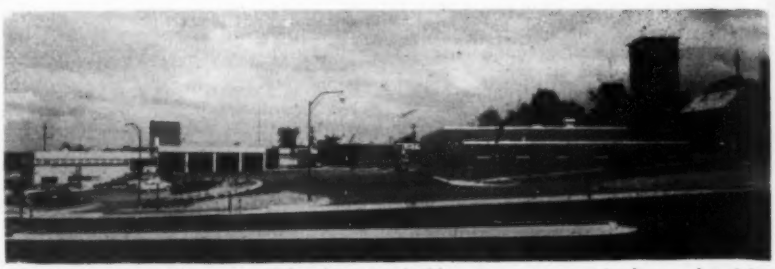
A SPECIAL REPORT TO FIRE ENGINEERING

ON Saturday, June 18, 1955, Baltimore County, Md., formally dedicated its new Fire Department Headquarters and Training Center, with fitting ceremonies, participated in by state, county, civic and visiting dignitaries. Fire companies from as far away as Tacoma Park, Md., joined with Baltimore City and County units in a lengthy parade, preceding the inaugural festivities.

Principal speaker of the occasion was Chief Roi Woolley, assistant editor, FIRE ENGINEERING. Other speakers included Hon. Theodore R. McKeldin, Governor of Maryland; Hon. Thomas J. D'Alesandro, Mayor of Baltimore City, and leading State and County officials who aided in creating the facility.

Chief Anthony P. Orban was presented an engraved silver plate as a token of esteem by Deputy Chief Lee Cockey, in the name of the fire officers of the County.

The occasion was a momentous one for both the County, its fire forces, and the fire service of the nation. For it ushered in a new era in county fire protection and training in firemanship. It may be said, also, that it established new precedents in county professional—volunteer relationship and operations.



View showing fire station, rear of headquarters building in center, repair shop and training area of Baltimore County.

Baltimore County

Baltimore County, is one of twenty-three counties in Maryland and is the only county having a fully paid fire department (plus volunteers). Geographically, the county covers an area of some 615 square miles; it has a population of 350,000 people.

The permanent paid County department consists of ten fire stations housing fifteen companies, and 268 men. Its rolling stock includes 15 pumpers in active service, four in reserve, one aerial ladder truck and one tank truck in the first line. In addition to this paid force there are thirty-one volunteer fire companies which operate in conjunction with the professional forces. This entire County set-up, it should be explained, is entirely independent and apart from the permanent Baltimore City Fire Department in command of Chief Michael J. Lotz.

All County fire apparatus, paid and volunteer, is radio-equipped and is dispatched from the new Central Fire Headquarters in Towson, Md. It should be added that the Baltimore City Fire Department has its own training program under Chief Trenner and his staff, and that statewide firemanship training is also maintained through the University of Maryland Fire School under Bob Byrus and his associates. With these and the elaborate Baltimore County Training facilities, the State of Maryland, unquestionably enjoys the most comprehensive training facilities of any state in the nation.

Baltimore County surrounds Baltimore City on the North, East and West. On the South is the Potomac River and Anne Arundel County. Contrary to some beliefs, Baltimore County is not entirely a residential area. It has many heavy, important industries, including distilleries, together with large schools, hospitals, nursing homes, and mercantile establishments.

There is ample water in some sections of the County and limited supplies in others. In some rural areas there is no water immediately available. The fire forces are often forced to relay water, using three and four pumpers in the line to supply hose lines and tankers. Portable pumps are frequently used with good results. These tactics naturally call for good training.

Standard requirements on each pumper are: 300 gal. water; 750 GPM pumps; 1600 ft. 2½-in. hose and 300 ft. 1½-in. hose, best grades; necessary fog nozzles and applicators for 2½-1½ and 1-in. lines; all necessary fittings; 3 salvage covers for each pumper; one 1,000-watt generator floodlight unit; 1-60 watt transmitter-receiving unit on each pumper and all other rolling stock; one deluge gun on each pumper. Two pumpers and one 750 gal. tanker are now on order.

It is interesting to note that the Baltimore County Fire Department furnishes dress clothing to all men. This includes: overcoat; summer coat; six blue-shirts and 8 white shirts yearly; one cap per year; one pair dress trousers and three pairs dungerees per year; work gloves to linemen.

Present fire fighting strategy calls for the use of portable extinguishers if the fire is small enough and, if not, one-inch booster line or lines from the booster tank. If this is insufficient larger lines are employed. Of course, back-up and supply lines are laid wherever it would appear advisable. Every effort is put forth to reduce water damage.

The nerve center of the County's fire fighting facilities is located in the new Fire Department Headquarters building, which is an integral unit of the recently dedicated Training Center, and Headquarters area. It is located at York Road and Bosley Avenue, approximately 1,500 feet north of the center of Towson. The new Headquarters replaces the historic

Dedication exercises at new Baltimore County Training Center.

View of repair shop at Baltimore County Fire Headquarters.

old landmark of the Towson Fire Company in downtown Towson.

Area Ideal for Training

The total Headquarters Area includes the training ground, fire station, auditorium, fire department shop and fire alarm communications center. Overall measurements of the area are 300 by 500 feet. What some might have been considered a handicap, but which has been turned into an asset, is a grade, giving an elevation of 37 feet to the 300-foot frontage. This affords an excellent driving range of steep grades, curves and narrow streets. On the upper level is an area where men train with master streams. All discharged water is reclaimed and returned to the drafting pits. This economical measure is advisable because all water in the district is metered.

Besides the Headquarters Building, which houses the several fire companies, auditorium and other facilities described later, the Area includes a six-story training tower; a utility building; a two-story attic and basement "smoke house" and training building; a gas chamber; concrete pits, and forms of different dimensions for fighting different types of fires, and the Fire Department Shop. The offices of the department are located in the Headquarters unit, together with the Auditorium. Its basement houses the County's Civil Defense Center.

A brief review of the major facilities may be of interest:

Headquarters Building — This houses the offices of the Department, including Administration (Chief Anthony P. Orban and Deputy Chief F. Lee Cockey); Fire Prevention and Arson Detection (Deputy Chief Louis Maisel); Training for Firemen (Deputy Chief Winfield H. Winehold); Alarm and Communications (Battalion Chief Charles S. Burk).

Also included is the 4-door Fire Station containing Watch Area; Engine Room; hose-drying tower and storage; dormitory with accommodations for 22; officers' and guests sleeping quarters; modern locker, shower and toilet facilities; recreation and dining areas; and completely equipped kitchen.

The roomy basement contains the heating plant; large storage area, and space for the Baltimore County Civil Defense Headquarters.

A feature of the headquarters is a spacious auditorium with seating capacity for 300, with sectional stage on casters that can be divided and used as display counters for training purposes. There is also a fully equipped projection room and two large rooms behind the stage, for storage and for the photographic work.

Alarm and Communications—All located in the administration building in a room having fire retardant walls, ceiling and floors. All windows are fire retardent glass.

The entire alarm and communications area is air-conditioned for winter and summer operation. The office of the Superintendent of Fire Alarm is located adjacent to the communications room.

The telephone switchboard is connected by trunk lines to all County telephone exchanges whereby fire reports originating in any district are transmitted to the Alarm and Communications Center. All fire reports pertaining to paid Company response are relayed to a particular station by telephone extension lines. All fire reports requiring volunteer company response are transmitted by two-way radio.

The entire County Fire Service is equipped with two-way radio units. All volunteer sirens are activated by selective signalling by pushing a button at alarm headquarters, thus causing a signal code to be sounded which causes a particular radio in a volunteer station to kick in the relay operating the siren.

When apparatus leaves quarters it is under complete radio control until its return. There are 109 mobile radio transmitter-receiving units in operation in the County Fire Service.

The box system has been a part of the Baltimore County Fire Department since the department's origin in 1882. Much of the original system was annexed by Baltimore City many years ago. The present system, numbering 500 street boxes, covers the metropolitan area of the County.

To facilitate dispatching, a unique mapping system has been devised. This combines a street intersection recording with a microfilming of maps where any area of intersection of streets is quickly located. It is not necessary for the dispatcher or the driver of the apparatus to be familiar with the area. The maps are photographed on 35 mm film slides and are projected on to a screen 24 x 36 in. in size. The map sheets are kept up to date monthly by listings received from the County Clerk's office.

A stand-by generator is located in the basement to provide power, should the outside supply fail.

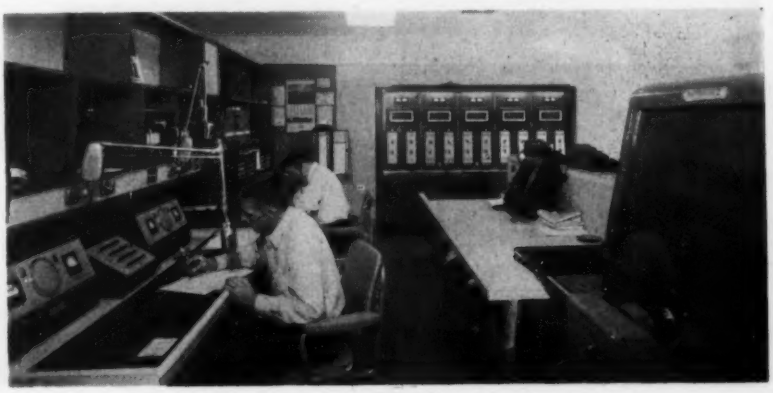
Vehicular Repairs—Shops — The departmental repair shop is equipped with the latest modern facilities including hydraulic car lifts; forced air circulating system and equipment for heavy duty repair work on motors, pumps, chassis, tanks, bodies, etc. The entrance area has four doors. The facility includes a paint room, stock room, hose repair room and space for ladder repairs.

Training Area—The entire training area has been planned to promote "training-by-doing" i.e., extinguishment of actual fires of all kinds. Lack of space prevents a detailed list of all the facilities, but these are the more prominent:

Smoke House—A 2-story, attic and basement building with one story attachment, fireproof construction. It is used for instruction in Class A and B fires and teaching of forcible entry, ventilating and fire-locating techniques. It has four rooms with changeable partitions, equipped with thermocouples throughout. There is a sprinkler system with A.D.T. controlled mechanism; pit in basement for simulated oil fires; catch basin for measuring water discharge; vented roof; floor drains; different types of windows. The building may be entered either by basement, first or second floor levels.

Drill Tower—Six stories (72 ft.) above ground; size 18 ft. by 18 ft. fireproof construction; stairway to top floor and ladder through ventilator opening to the roof; fire doors and shutters; different styles of windows; fire escape from ground to top; standpipe with valve and hose connections on each floor and roof; training net, etc.

(*Continued on page* 942)



Communications room of Baltimore County Fire Headquarters.

Putting More Power and Punch Into Modern Fire Fighting

American Industry and Business Have Progressed by Substituting Mechanical for Manual Operation. Why Not the Fire Service?

By ROI B. WOOLLEY
Assistant Editor, FIRE ENGINEERING

Editor's Note:—**Fire Engineering has long counselled greater consideration of the principles and methods of fire attack as compared with fire defense. That means getting into operation quickest with the most in facilities and equipment.**

Today the "most" of personnel may be far too short of the necessary quota to prosecute spirited attack, and to make rescues and so on. This is one reason for the increasing number of additional alarms banged in for more manpower. It is one reason, also, for the mechanization of fire suppression operations, for substituting mechanical energy for manual effort.

It is on this premise that the author submits the accompanying text. Some, particularly among the "old timers", may not agree with his theories. Others will. And they will have plenty of substantive evidence to support their contentions. But even they may not fully realize the far-reaching possibilties of mechanization, as applied to fire control and extinguishment.

It is the hope of the editors and the author that this message may inspire progressive fire forces to review their own operations and facilities and to consider the possibilties of supplementing manual with mechanical effort.

ONE of the foremost contributing factors that has made this nation great has been its ability to mechanize operations formerly done slowly, laboriously by manual effort.

If there is any field where mechanization should be developed to the greatest degree, it is that of fire suppression. For no other calling is so closely concerned with life and death. In it, split seconds may determine the saving of someone who might otherwise be lost to destructive fire. It is difficult to find any valid excuse why mechanical equipment and methods should not be installed throughout the fire service.

There is another factor to consider, in weighing the merits of such mechanization. That is the effect it has on the fire fighter. If it will save him physical punishment, as well as energy and threat of injury, then he should welcome any such development.

Today, with the serious shortage of men in most initial fire fighting operations, mechanization takes on special significance. In industry, mechanical power has been called on to multiply the effectiveness of manpower. In fire suppression, many fire chiefs have had to call upon mechanization in one form or another, to augment manual operations. The only thing wrong in some of these instances is the fact that their own fire departments had to engage outside mechanical resources for such facilities, frequently with serious delays to the operations.

Energy is a generic term. It takes energy to move a body. We must heat a piece of wood to make it burn, but it gives out heat (energy) as it burns. We use heat energy to start a fire, but once started, the fire in turn gives out heat energy. In order to bring about any change in the condition or state of matter, energy must be used.

This may be old stuff to scientific fire fighters, who know the various kinds of energy: mechanical (which is produced from some kind of machine); heat energy, electrical energy, and chemical energy. We are concerned here primarily with *mechanical energy*.

Portable air saw speeds up cutting of plank flooring. The unit shown is one of several air-powered forcible entry tools operated by air compressor in the Cincinnati Fire Department

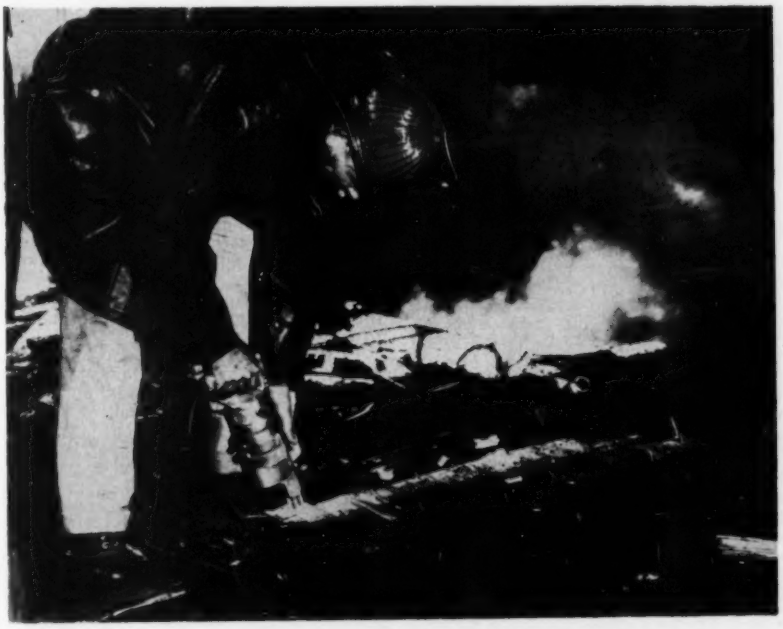
It takes so much energy to swing an axe, whether the axe is cutting a roof or floor, or breaking out a door. If there are smoke and toxic gases present, we know that the same amount of energy is more difficult to produce. Therefore, we advocate the use of breathing equipment to facilitate the operation. And here the "mechanics" of breathing enter into the picture. We have introduced "machinery" into this phase of fire suppression and rescue with telling effect.

We have also mechanized certain other elements, such as fire detection, fire alarm transmission and the response of fire apparatus. We have even gone far in the field of mechanical automation (the very latest development of mechanical energy application). This is in the push-button control of fire—if not its complete extinguishment. On an airplane, the pilot pushes a button and the built-in CO_2 or chlorobromothane system snuffs out the fire in the motor. In private industry, an electronic eye *discovers* fire and automatically activates a mechanical extinguishing system, while transmitting an alarm. This is automation at its most effective peak. But this is only a very tiny drop in the

Power-operated hack saw opening the trunk of a car.

Cutting off the steering column of a car is short work for the power hack saw—a very useful tool for fire department rescue squads.

San Francisco fire fighters employ pavement breaker to open up basement areas at multiple alarm mercantile fire. In some cases like this, all the water in the world may not be as effective as one power tool plus a good well-charged cellar pipe!



Power-driven hack saw makes quick work of cutting metal and wood flooring.

bucket. These historic scientific applications should suffice, however, to prove our point that there is room in the fire service for mechanization.

The Place for Mechanical Power in Fire and Rescue Operations

It is no secret that fire control, extinguishment and overhaul operations call for use of power in some form. So, too, do much rescue and emergency work. Until quite recently, measured in terms of its existence, the fire service has relied more or less upon the "armstrong" method for performing most of these tasks. Fire apparatus has carried a lot of tools and equipment (and still does) which for the most part have depended upon the muscles and skill of their users. A prerequisite of a good fire fighter was considered to be plenty of muscle, it didn't matter so much what was in the mind. Jests are still bandied around about all that a fire fighter requires is a strong back and a weak mind.

It is generally agreed the four objective fundamentals of fire suppression are (1) Locate the fire; (2) Extinguish it; (3) Overhaul it and prevent re-ignition; and (4) Salvage all that can be saved. There is still another element which is not generally counted as part of fire suppression, but which for the purposes of this study, may be considered. That is demolition (wrecking).

Most fires start small; they grow by feeding upon combustible materials and through failure to discover them in their incipient stage, or through inability to cut off their expansion.

Anything that handicaps fire fighters, once on the scene, to locate the seat of the fire, just so much further delays control and extinguishment. That delay may be attributable to lack of manpower, or mechanical equipment or both.

This being a fact, it is in order to study those work factors which are requisite to these several operations, in the life history of every fire and rescue incident. In brief, what is the labor (effort) required, and where (and how) must it be applied?

Power — For What?

Before we take up these several basic operations it might be in order, just for the record, to consider the kind of power, manual or mechanical, that is required, in one form or another, during the life history of the fire suppression and/or rescue incident. Of course it will depend upon the extent and severity of the individual incident, but the operations that are generally performed, usually with tools of one kind or another, include—

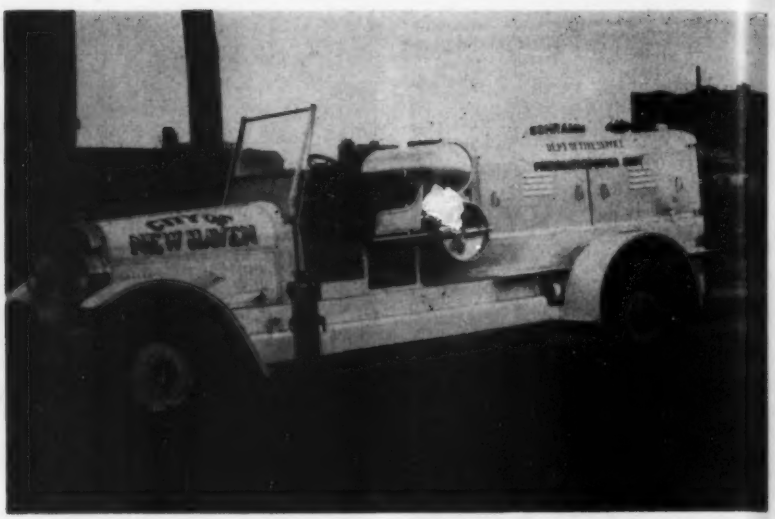
a. Cutting . . . chopping . . . sawing
b. Breaking . . . loosening
c. Boring . . . twisting . . . turning . . . ripping
d. Lifting . . . prying . . . pulling . . . separating

To these tasks may be added still other efforts (operations) which the fire fighter must undertake, but which do not directly involve mechanical power. Aside from being transported to the scene of the emergency by means of powered vehicles, the fireman must provide his own locomotion.

Power can help him in climbing, as shown by his use of mechanically powered ladders, slings and winches. This same power helps him in carrying, lugging and dragging, viz.: the use of a

Photo by Hellriegel and Heffernan

Members of New York Fire Department Rescue Co. 1 demonstrate proper use of O'Brien electric cutter, using skid for flooring.



Pneumatic power unit in service in the New Haven, Conn., Fire Department.

Hoseman William Rose of Philadelphia's Rescue Squad No. 1 practices buzzing through a door with a 3.5 horsepower chain saw. The chain saw is standard equipment along with respirators, oxygen tanks and other emergency rescue equipment.

winch hoist or other device for raising hose-lines, ladders and other equipment.

Thus it can be seen that there are, and no doubt always will be, some physical actions which the fire fighter must perform and which lend themselves to little, or no, mechanization. It is in the category (a) to (d) above, that we must look for possible applications of power to perform what have been manual actions.

Power in Forcible Entry

Used in its broadest sense, no single rescue and fire suppression operation calls for so much physical effort, and therefore offers so great opportunity for substitution of mechanical means and methods, as forcible entry.

Forcible entry may involve several or all of the following actions:

a. Opening doors of all types; windows (including barred openings); shutters, etc.

b. Opening roofs, walls, floors, ceilings, partitions, etc.

c. Opening sidewalks, pavement (including gratings and deadlights), etc.

d. Opening chimneys, ducts, pipes, etc.

e. Opening elevators and shafts of all kinds; dumbwaiters, etc.

f. Opening miscellaneous enclosures, such as vaults, sewers, wells, refrigerators, etc.

Almost without exception these operations can be performed by mechanically powered devices of one kind or another. At least, except where the task is itself so simple as to indicate that the use of the mechanical means will entail more labor than it will eliminate, the fire department should be prepared to enlist power for the job.

In normal situations, a hand tool such as axe, claw or hook, will suffice to open orthodox doors, windows, fanlights, etc. But when they are of metal, or plastic (it may be necessary to cut a frame, etc.) or there are screens or bars involved, it is a foregone conclusion that power tools are indicated.

The use of metal storm windows, screens and jalousies is today almost universal in modern buildings. All of which increase the problem of forcible entry, especially if we desire to accomplish maximum results with minimum damage to the structure.

Much the same can be said of roofs, floors, walls, ceilings, etc. Where formerly wood and plaster were the common structural materials for most occupancies, today wood is giving place in many instances to more durable, more costly and less workable material, from the fire fighter's viewpoint. Metal lath is being more widely used for some types of construction and is far more difficult to work with than wood lath and plaster. Some plastic construction is almost as tough, and as hard to manipulate, as metal and concrete. Therefore it is safe to say the progress being made in building design and construction does not easily lend itself to forcible entry and overhauling. Just the opposite.

If any final evidence were needed to justify this statement, it can be found in the trend toward windowless buildings, from mercantile and industrial on one hand to the all-glass or glass-and-metal commercial buildings on the other, which present new phases and new problems in opening up for the fire fighter. This situation bids fair to worsen as the days pass.

Another phase of forcible entry which fairly shouts for power driven equipment is its need in transportation emergencies, both vehicular and airplane. Motor trucks with their all-metal bodies and trailers, as big as freight cars, traveling the highways and byways, present new rescue and fire control situations, of which forcible entry plays a big part. The old fire department forcible entry tools may still suffice for ordinary opening-up operations, when rightly employed, but the same operations can be performed more efficiently with simple, light, power tools.

The same thing can be said of airplane crash fire and rescue work. Fortunately here the armed forces have managed to come up with mechanized equipment that will cut the fusilage or nacelle, or other metal part of a plane, like a hot knife going through melted butter.

A Concrete Example

A great many years ago a bane of the fireman's life was the iron shutter. It was as much as a fireman's life was worth to try to remove the unwieldy eyesores with any degree of speed or safety to those working below. Well, the old shutters have gone but so, too, in many cases, have the windows, and instead of these openings, the fire fighter all-too-often must break or cut through brick or masonry to ventilate interiors. And he can't do that with any degree of facility using the old-fashioned battering ram.

Not only walls present new forcible entry problems but so, too, do roofs, floors and decks. FIRE ENGINEERING has published many reports emphasizing the problems of opening up the modern concrete and composition roofs, floors and decks, for ventilating, or for reaching the fire. It is only necessary to remind our readers of the absurdity of attempting to break through such sturdy barriers with anything but the most efficient pavement breakers, and the like. Such

(*Continued on page* 936)

Oil Refineries Hazardous But Show Good Fire Record

Municipal and Plant Fire Fighters Meet New Problems with Improved Methods

A STAFF REPORT

Editor's Note: Oil refineries are usually huge affairs, which may cover several square miles, with numerous steel towers, gleaming metal spheres and labyrinths of pipe. To the average fireman, they are a maze of mysteries. To those fire fighters, industrial and municipal, whose duty it is to protect these vast and vital installations, they present never-ending problems in fire safety and defense.

These problems are echoed in the protection of kindred installations, such as oil storages, tank farms, loading and unloading areas, and the various processing plants which convert refined oil into the thousand and one products that find their way into home, office and factory throughout the nation.

No single study of the brevity of the accompanying could hope to tell the entire story of the fire suppression problems entailed in the great field of petroleum production, processing, storing, transporting and handling. Even the study of the single entity, such as refining and refineries, as attempted by the author, of necessity omits many important details. The editors hope, however, that this message will provide readers of this Journal with a better understanding of the fire protection problems in refineries and of measures being taken to prevent fires, and minimize those which occur.

The author gratefully acknowledges the assistance of the American Petroleum Institute, New York City, for permission to use basic information contained in its numerous informative publications. Thanks are also expressed to Fire Chief George McAlpine, of the Oklahoma City Fire Department for permission to quote from his interesting paper delivered before the Missouri Valley Association of Fire Chiefs, June 13, 1953, and to the several other authorities mentioned in the following.

THE petroleum refining industry is nearly 100 years old. Its life has been signalized by accelerated progress in the development of the technology of petroleum refining, as the use of oil and its products, particularly for power, heat and lubrication, found new and amazing applications.

Much of this progress has been made possible by a corresponding advance in the science and technology of fire protection and prevention. Reviewing the romantic history of the petroleum industry for the past half century through the eyes of the fire protection engineer and professional firefighters, one cannot but be impressed by the struggle between man on the one hand to develop broader and deeper applications and uses of petroleum and its products, and on the other to devise methods and facilities for controlling, confining and extinguishing (as well as preventing) fires which are kindred to its new uses.

Within the span of the veteran fire fighter have been created and marketed, to become articles of common use, materials born of petroleum for building, for household, industrial, transportation, medical and other scientific uses, nearly each of which has introduced its own fire protection problem. It is a credit to the petroleum industry itself and its fire protection engineers, as well as to the nation's fire service, that fire and life losses in this particularly important category are being held to a minimum.

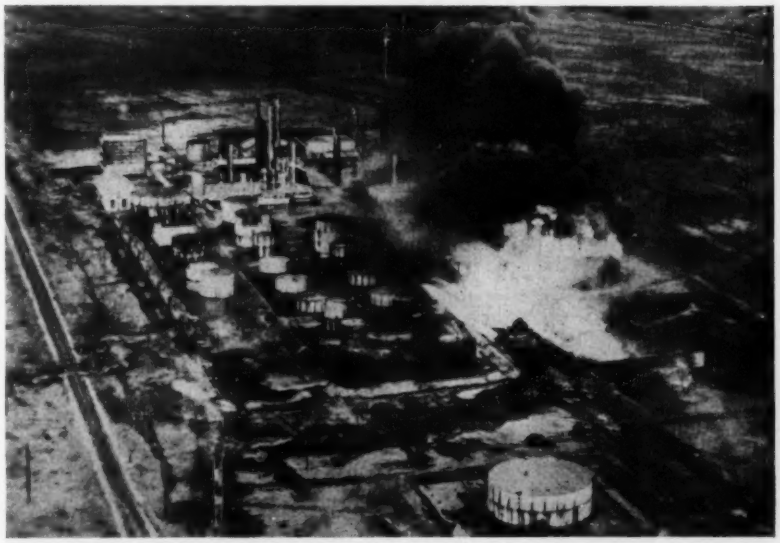
Not many of even the most advanced of the nation's fire engineers are fully aware of all the unusual and peculiar fire and explosion hazards which attend the development of the processes and products of the vast petroleum industry, from the time the raw "nature's liquid gold" comes from the well until it is pumped to the refinery thence in refined form transported to bulk storage and finally to the user in its near-natural state, or as an unequal part of some other product. That is because it is impossible to grasp the almost fantastic applications of this substance we call petroleum.

There exists no single textbook which can hope to tell the whole story of the boundless use of petroleum and all its by-products, and of the fire hazards created by this vast use, and of the various facilities and techniques developed by fire protection and prevention engineers to cope with these hazards. It should be stressed that the fire fighter of today, professional and volunteer, whether in city, town, village or country, is constantly exposed directly or indirectly to the hazards created by production, processing, transporting or storing of petroleum products. Wherever the auto, the diesel train, the airplane, the motorboat go, there, too, goes the possibility of destructive fire. No fire department, big or little, can afford to ignore the challenge this development poses. None can afford to remain ignorant either of the hazards, or of the means to confront and overcome them.

Losses Fluctuate

It is said that 15 per cent of all industrial fires and explosions can be attributed to flammable liquids.[1] The National Board of Fire Underwriters reports that in the last 10 years "petroleum and its products" caused 9 per cent of all fires.[2] The National Fire Pro-

[1]Factory Mutual Record, Aug., 1953.
[2]Facts and Trends, Oct., 1953.



When blazing oil tanks threatened the big Danaho Refinery at Pettus, Tex., bulldozers were called on to erect a protective dirt wall to contain the fire. Lightning caused the big blaze. This picture graphically illustrates the typical refinery layout with adjacent diked storage tanks.

Hazardous exposures are present in most refinery fires. Ten Los Angeles fire companies and refinery workers fought successfully to prevent complete destruction of not only an East Side refinery, but storage tanks and buildings, loading platform and tank and freight cars.

tection Association[3] includes in its average U. S. fire losses during the period 1947-1951 1,460 fires in bulk oil storage and refineries, out of a total of 111,980 fires. The loss (property) in those fires amounted to $14,240,000.

The petroleum industry, of necessity, rates high on the list of hazardous industries of America. Gauging by the hazardous nature of this enterprise so far as fire is concerned, one might expect fire losses within this industry to exceed those of all other leading industries. Actually, however, when all facts are weighed, the industry has made an excellent showing. The Petroleum Institute submits data showing the fire loss record of refineries for the years 1934, 1948.[4] In that period there were a total of 3,019 fires confined to the refinery, two which spread outside the refinery and 17 which originated outside the refinery but spread into it. The number of refineries reporting was 1,870. The fire loss ratio based on total loss per $100 of insurable value was 0.134. The fire loss in plant and equipment (other than oil stocks) amounted to $18,995,853 as compared with the total insurable value of the 1,870 properties amounting to $10,768,196,164. The losses on oil stocks (as distinct from refinery plant and equipment losses) for the period was $1,326,539, compared with insurable value of $4,377,685,530.

Reports submitted to the Institute for the year 1952 (which figures are typical of an average year), covering 153,170 properties with an insurable value of $6,564,211,921, indicated a total of 1,146 fires, or a frequency per 100 properties of 0.748. This indicates that there were less than 3 fires for each 400 properties covered. These figures include all of the fires which occurred on these properties during the year whether they originated outside of or on oil company property. The ratio of outside fires which spread **to** oil property against oil fires which spread **to other** property was 1.6 to 1. The 1952 record shows that not a single fire which originated at the refineries, bulk plants, bulk terminals, natural gasoline plants, pipeline stations, tank farms, or on tankers and barges, covered in the report, spread outside the property.

In spite of an increase in the number of 1952 fires to a total of 1,146, from 926 in 1951, the industry's actual fire loss in 1952 declined to $8,650,074 from a 1951 total of $9,189,913. The total insured value reported for 1952 was $8,510,004,945, indicating a loss ratio of 10.2 cents per $100 of insured value, thus showing a decline in the industry's 1952 fire loss ratio of more than 3 cents per $100.

The industry's fire losses by classes of property for the year 1952 follow:

[3]NFPA Fire Protection Handbook, 11th ed.
[4]American Petroleum Institute, Department of Statistics, 50 W. 50th St., New York, N. Y.

Fire Record, Refineries**

Broad Breakdown (100%)	
Special Hazards	80%
Common Hazards	12%
Unknown Causes	8%
Special Hazards (total 100%)	
In stills, fractionating, cracking or cooling towers	26%
In storage and working tanks	23%
Piping and valves	16%
Other processing units	12%
Mixing and blending tanks	10%
Pump houses	9%
Miscelleneous	4%
Common Hazards (total 100%)	
Welding, cutting, etc.	23%
Misuse of electricity	15%
Exposure	15%
Heating defects	13%
Spontaneous ignition	10%
Smoking and matches	8%
Miscellaneous	16%

**NFPA Fire Protection Handbook, 11th ed. National Fire Protection Association, 60 Batterymarch Street, Boston, Mass.

TABLE 1

Classes of Property	Losses on Plant, Equipment, etc.	Loss on Oil Stocks	Total Losses
Oil leases	957,709	13,236	970,945
Tank farms	135,785	92,427	228,212
Pipe-line stations	305,467	3,422	308,889
Natural-gasoline plants	197,190	.....	197,190
Refineries	3,013,453	142,882	3,156,335
Bulk terminals (shore)	563,866	63,931	627,797
Bulk plants (inland)	235,045	42,483	277,532
Service stations	196,733	.....	196,733
Tank trucks	115,619	.....	115,619
Tankers and barges	2,451,798	.....	2,451,798
Unclassified properties	115,024	4,000	119,024
All properties	8,287,693	362,381	8,650,074

Taken from API Quarterly, Autumn, 1953

TABLE 2—NUMBER OF PROPERTIES AND FIRES REPORTED FOR 1952

Class of Property	Total Number of Properties Reported to Have Been Owned or Operated	Number of Fires Reported: Originated on Oil-Company Properties — Confined to Property	Originated on Oil-Company Properties — Spread to Other Property	Originated Outside But Spread to Oil-Company Properties	Total Number of Fires	Frequency: Fires Per 100 Properties
Oil leases	28,137	216	1	4	221	0.785
Tank farms	505	8	..	..	8	1.584
Pipe-line stations	2,303	30	..	2	32	0.139
Natural-gasoline plants	329	29	..	1	30	9.119
Refineries	193	271	..	..	271	140.145
Bulk terminals (shore)	1,205	15	..	3	18	1.494
Bulk plants (inland)	28,504	83	..	4	87	0.305
Service stations	51,944	293	16	13	322	0.620
Tank trucks	15,657	41	4	2	47	0.300
Tankers and barges	769	6	..	..	6	0.780
Unclassified properties	23,624	95	2	7	104	0.440
All properties	153,170	1,087	23	36	1,146	0.748

Figures from—A.P.I.

The preceding table shows the number of properties and fires reported for 1952.

Carelessness Leads Causes

Some idea of the causes of refinery fires and their location may be drawn from the following Table. Basically, carelessness and poor housekeeping are guilty of most fires in the refinery category, as they are in nearly every other segment of the many-sided petroleum industry. It is disclosed, also, that the large fires occur with greater frequency and severity in those plants having the poorest fire prevention and fire protection policies and programs. An oil refinery is a place where every man must constantly be on his toes and fire-conscious. But in any industry of such size, operating figuratively and literally under pressure, 24-hours-a-day, for the most part, familiarity will breed contempt of the best fire safety strategy, and the results all too often make the headlines.

The Industry will not soon forget the hectic ten days in July, 1951, when three major oil fires in Newark, Wilmington, Cal., and Kansas City roared out of control, causing wide and heavy property damage. Two of those fires were described in detail in this Journal. They were the Warren Petroleum Co. liquid propane blasts and fire, July 7, which threatened Newark's vast industrial area, and the burning gasoline storages during the Kansas City flood of July 13-17.

FIRE LOSS CHARACTERISTICS OF OIL PROPERTIES*

	Tank Farm	Refinery	Shore Bulk Plant	Service Station	Tank Truck	Tank Vessel
FIRE FREQUENCY RATES#						
All classes fire	1.24	162.46	2.08	0.57	0.43	1.07
Spread into property	0.04	0.91	0.20	0.03	0.01	0.06
Spread out of property	0.04	0.11	0.01	...	0.01	0.01
AVERAGE FIRE LOSSES						
Per fire—Plant and equipment	$1,593	$6,253	$6,092	$318	$1,215	$51,067
Oilstocks	24	437	2,040	17	....	....
Total	$1,617	$6,690	$8,132	$335	$1,215	$51,067

#Frequency rates are based upon number of fires per annum per 100 properties.
*Abbreviated from "Fire-Loss Report of 1948 Completes 15-Year Record on Properties, Oil Stocks, and Fires." American Petroleum Institute, Oct., 1949, Washington, D. C.

It appears that despite all possible safety provisions, there will be large-scale fire disaster in the production, storage and/or handling of petroleum products. But their destructiveness at least in the refinery group, we're told, can be, and is being, minimized by careful planning and untiring vigilance of the fire protection forces of the many refining companies.

Again, it should be pointed out that fire protection in refineries includes many problems which differ from those found in other industrial plants. The fire suppression techniques have been developed largely of sheer necessity, and through long experimentation and trial-and-error. The watchword, of course is vigilance, constant vigilance.

The preceding data conveys a good idea of the comparative basic loss factors between refineries and other more important oil properties.

Fire Prevention Problems

Anyone called upon to combat fires in refineries, oil installations and tank farms must have a broad knowledge of the basic principles of combustion and the propagation and transfer of heat. In the field of petroleum products, the possibility of accidental fire hinges upon practically the same three conditions which are responsible for most other forms of fires, viz: (a) A combustible material must be present in vapor form; (b) there must be a combustible mixture of air or oxygen; and (c) that mixture must be brought to ignition temperature.

Every fire fighter should know the old triangle of "Heat-Air-and-Ignition," and he should know the time-accepted principle that to extinguish a Class B (or any other type fire) it is necessary to eliminate any one or more of the three above conditions under which fire is possible.

Petroleum is most frequently produced, handled and stored as a liquid. "Petroleum," "crude" or "crude oil" are terms used to describe natural mineral oil as it is obtained from the earth. Its constituents vary widely with the oil-field from which it comes, but in no case is the crude oil used commercially without some form of treatment.

This treatment consists, among other things, of distillation to separate the crude into its different fractions, which are subsequently refined by treatment with different chemicals. Certain products may be "cracked" by treatment under high pressure to increase the yield of gasoline at the expense of heavier fractions. This is the function of the refinery or processing plant.

The crude oil produced throughout Oklahoma, Kansas, Texas and Arkansas and in some other states, is generally a thin, greenish oil, with about the consistency of gasoline, having about the same flash point.

This crude oil in many cases is brought to the surface along with a heavy flow of gas; it then passes through a separator where the oil is separated from the gas and converted into tank storage, the gas being conveyed by pipe lines to compressor stations, where oil and gasoline are recovered from the gas by processing the gas by compression. The crude oil, from the moment it comes from the well, is highly flammable as of course is the gasoline from the compressor station. This is attributable to the volatility of the raw and treated products. For it isn't the oil itself, or its derivatives, that is dangerous, as every experienced fire fighter knows. It is the vapor formation from the products. Neither a liquid nor a solid petroleum will burn without first having been vaporized; therefore, volatility is the most important property of combustible substances from the standpoint of fire and explosion hazard. By "volatility" we mean the inherent tendency of a substance to vaporize.

At the risk of being repetitious, it should be said gasoline, the most common petroleum liquid, has a flash point of about 0 deg. F. when at atmospheric pressure. It begins to boil at about 100 deg. F., or higher, before the less volatile portions have vaporized. Heavier petroleum products have higher boiling points and, consequently, lower volatilities.

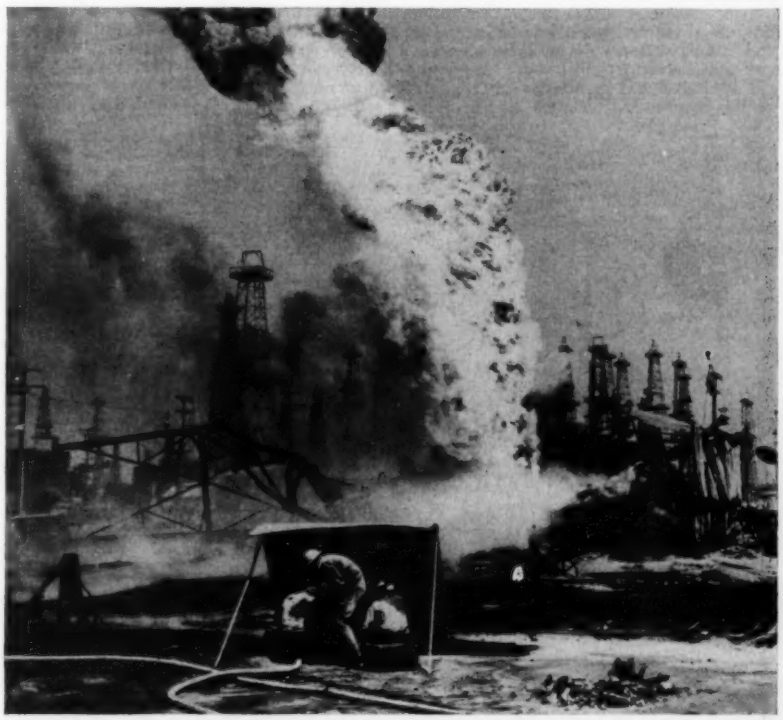
Flash-point data on other common petroleum products are[4]:

Kerosene....flash point, 120 to 145 deg. F.
Light stove or burner oil..flash point, 140 to 175 deg. F.
Heavier fuels .....flash point, 175 to 250 deg. F.
Lubricating oils .....flash point, 225 to 450 deg. F.

A word about octane number may be in order here. Certain gasolines have what is known as a high octane number and such fuels are sometimes, but erroneously, believed to be more flammable than those having a lower octane rating. This misbelief is frequently evidenced in the publicity given air crash fires and other disasters involving gasoline. It should be pointed out that the octane number is an indication of the suitability of a fuel for use with certain types of high compression internal combustion engine and depends partly on the chemical structure of the fuel and partly on the addition of chemical compounds, such as tetraethyl lead, designed to reduce engine knock. The octane number is primarily of interest to the automotive engineer and has no significance in fire fighting.

Factors That Influence Fires

This study is not intended in any sense to be a manual of fire prevention and protection for refineries and various oil installations. At best the author can only hope to sketchily outline the more important factors of refinery design and operation which bear directly upon the



Oil well fires are difficult and dangerous to control. Here oil field fire fighters operate behind a shield in an effort to control raging blaze at Huntington Beach, Cal.

problem of preventing and combating fire in such occupancies. The reader who is desirous of getting all the details can find no better general treatise than the publication *"Fire Protection in Refineries,"* published by the American Petroleum Institute, Division of Refining, 50 W. 50th Street, New York, N. Y.

According to this authority the factors to be considered in suppressing fire in oil refineries may be summarized as follows:

Location: Aside from economic and political considerations in locating a refinery, factors to be considered are availability of water supply; frequency of severe storms and floods; available public fire fighting facilities and occupancy of adjoining property (exposures).

Topography: Older refineries were frequently built on hilly ground in order to utilize gravity flow as much as possible. Level land is now more preferable. Ground should be able to support storage tanks; and be capable of good drainage.

Water Supply: Ample water for processing is essential; consideration also should be given for maximum needs for fire fighting.

Storms and Floods: Flooding of a refinery may cause fire hazards greater than would occur in any other types of industry. Possibilities of floods and severe lighting storms should be weighed in locating any refinery (as well as tank farms, etc.).

Public Fire Protection: This is what the API has to say on this subject: "The size, character, and efficiency of available public fire department, water mains, etc., should be investigated. An efficient fire department will add materially to the safety of the plant, and may have a considerable effect on the cost of plant fire protection and fire insurance."

Fire Laws and Ordinances: Legal requirements and local and state limitations may affect the decision to locate and build a refinery, as well as to operate and maintain it.

Layout: Plant management designs and lays out the refinery and facilities for greatest efficiency and economy of operation, and the reduction of all possible fire hazards to both plant and exposures. The roads and streets should be ample for safe, rapid communication, permitting access to all units of the refinery, including tanks, to assure efficient utilization of fire fighting equipment at all locations. Fire-protection-wise, blocks of 400 to 600 feet, with street widths of 50 to 100 feet between building lines, are recommended. Good roads, too, are essential in tank farms; access to all tanks, regardless of weather conditions is essential; roads should be well drained, of hard surface with adequate turnouts.

Power Lines: Power lines may be carried overhead or underground. If the former might be subjected to high temperatures in case of fire, consideration should be given to the importance of the circuit and the extent to which such lines should be re-located or protected against exposure.

Drainage System: Drainage systems should be provided with fire stops or water seals located so as to isolate branch lines and to sub-divide trunk lines, otherwise fire may spread within a refinery.

Water Lines: Special consideration should be given the water-piping system and supply, as regards location and size of mains, materials and flow capacities. When ample supplies of potable water are available, the fire mains, processing mains, and sanitary supply may be a common system, according to API recommendations, but if potable water is scarce and salt or other contaminated water is used for general refinery purposes, two separate systems, one for fire, may be advisable. Mains for fire hydrants should be of ample size and suitably located to supply water to any location. The installation of booster pumps in fire lines should have careful consideration.

Operating Recommendations: Areas wherein are handled large quantities of oil, such as distillation, cracking or other process units, should be paved with hard surface material, and should be subdivided to localize any flow of oil due to line breakage or failure of equipment. Curbs or low fire walls may serve for this.

Valves for controlling fuel supply in furnaces should have remote control, as should valves controlling steam-smothering, water-quenching pumping-out and charging lines.

On process equipment in which regular flow may be interrupted, and in which the process is such that pressure may build up, consideration must be given to safety valves and methods for carrying off gas or liquid vented through them.

Cracking processes introduce certain fire hazards that call for special consideration. In the event of fire at such a unit, it is desirable to remove any large quantities of oil from the system as quickly as possible. This may require emergency cooling equipment.

Elimination of water from charging stocks is an important detail in prevention of fire in cracking operations. There are numerous other details of design and arrangement of process apparatus and equipment which are considered by the petroleum fire protection and safety engineer. Lack of space prevents their inclusion here. Processing equipment is found in a wide variety of types in use, and there are constant changes being made. It can be said that installation and operational practices usually follow the codes and standards prescribed by the industry, the National Board of Fire Underwriters and the National Fire Protection Association and the American Society of Mechanical Engineers.

All permanent buildings for operating equipment preferably should be constructed of fire resistive materials. Doors should be of fire-resistive construction, open outward and be so located that in case of fire a person need not be trapped in the building. Self-closing doors are desirable in structures containing combustible material or apparatus. Special attention should be given to ventilation and drains to carry dangerous fumes and gases outside of buildings, away from doors or windows, and where free air will prevent vapor accumulation. Pump houses and compressor houses in particular should be well ventilated.

Tanks should be constructed in accordance with API Standards No. 12A and 12C *"Specifications for Standard Tanks With Riveted Shells"* and *"Specifications on All-Welded Oil-Storage Tanks."*

Fire walls or dikes are considered necessary particularly with regard to tanks containing crude oils, or others which are subject to boilovers in the event of fire. When tanks contain crude oils or products which may boil over in a fire, the API considers it good practice to design walls or catchment basins with capacity equal to the tank, or tanks, under consideration. The kind and construction of dikes are suggested by the Institute, as is layout of the yard oil pipe lines. The Institute furthermore recommends that process units be enclosed by low walls or curbs in order to prevent the spread of fire in case of break in the system.

Railroads, high fences, lack of roadways and approaches, dikes, overhead wires and tall grass, to name a few, complicate the task of fighting refinery fires. This $50,000 Charlotte, N. C., blaze started in a big LPG tank truck and swept Rulane Gas Company plant.

Sprinklers Rate High

The installation of fixed sprinkler systems, automatically or manually controlled, may be desirable for certain installations, such as to cool exposed pipe lines with a minimum of water. Sprink-

ler systems can be interconnected with foam systems for use in fire extinguishing purposes in the trench.

A hazard in refineries is the elevated storages for working quantities of oil or other flammables. Elevated containers holding large quantities of oil, and other supporting structures, should receive special attention and all precautions should be taken to prevent the failure of such vessels or supports, according to A. P. I. Distortion or failure of a supporting structure due to fire may cause failure of the vessel, resulting in deluging nearby equipment or other exposures with flammable liquid.

A frequent source of fire trouble are piers and wharves. Wood is generally used for their construction although fire-resistant material is urged for congested areas. Structures containing timber work above low-water level should be protected in accordance with the best modern practice by fire-curtain walls, cut-off walls, sprinkler systems, or other suitable means. Solid bridging between stringers may prevent fire spread. Also, provision should be made to prevent oil spillage from collecting on pier or wharf and from reaching water. Buildings on docks should be protected by sprinklers if possible. Tranverse fire walls should be provided where structure areas are large.

Another factor bearing upon fire communication is the location and extent of railroad tracks, loading racks and unloading racks, and provisions for tank car storage. Yard trackage, it is said, should be such that storage areas, and loading and unloading racks, cannot be cut off by refinery fire. Such trackage should be kept as far as possible from locations in which flammable vapors may be given off.

One of the most hazardous operations, and locations, within the refinery is the filling of small containers in the open. Local conditions dictate the fire protective measures to be taken, but likelihood of spills and overflows, it is said, may be minimized by the use of pre-determined quantity fluid meters, automatic scales, or self-closing, float-operated filling nozzles. Drain troughs, catch basins and trapped sewers may help localize spills. Drum and can-filling should be electrically grounded, and provision made for electrical continuity between the spot and container being filled.

Truck loading racks have been the scene of many serious refinery fires. It is pointed out that as a result of increasing use of tank trucks for long-distance hauling, truck loading racks are becoming more common in refineries. Details for safeguarding these racks and exposure areas against fire have been worked out by the API, as have recommendations covering loading racks for gasoline or similar products. These include details of grounding pipe lines, bonding tracks, and provisions for expansion due to heating by the sun, and so forth.

Special consideration is given to loading racks for liquefied petroleum gases, a subject that should be studied by every fire safety official, but unfortunately one that cannot be included herein. The same thing applies to electrical bonding and grounding for protection against lightning (the cause of a large percentage of large-loss refinery and other petroleum installation fires). This subject, from the fire protection viewpoint,

Refinery and oil fires can cover wide areas. This extensive Huntington Beach, Cal., installation was threatened with complete destruction by early morning blaze that covered nearly a square mile, destroyed scores of storage tanks and wells, causing damage estimated in the millions.

is quite complex and wherever doubt exists a competent electrical engineer should be consulted.

In conclusion, the Petroleum Industry is a vast and far flung enterprise, whose ramifications affect every fire department, big or little throughout our land. Not every community may have a refinery within its environs, or a tank farm, or bulk terminal, but almost without exception it has its service stations, and its storages of flammable liquids. And over its railroad right-of-way and its highways, pass the endless stream of carriers loaded with the hazardous products of petroleum.

The Industry is fully conscious of its responsibilities. It seeks the cooperation of municipal fire fighters when in need. It is constantly engaged in educating a careless and indifferent public to the proper uses of its products, and in teaching fire fighters the fundamentals of fire suppression in connection with its plants, processes and storages.

Some Procedures and Precautions for Fire Fighting Personnel

The following precautionary recommendations have been prepared from information received from trained oil plant fire brigades, chiefs of municipal fire departments serving extensive oil installations, and from various U. S. and foreign governmental and other group sources. Some of these recommendations may apply more forcibly to one hazardous situation than another, such as conditions encountered in tank farms, or other oil installations. They are offered as a partial check list for the reader who can, if he wishes, add his own rules.

1. Never engage in an operation involving control of a serious fire in any oil installation, of whatever type, without a thorough and painstaking sizeup, with emphasis upon (a) exposures; (b) extent to which fire has progressed; (c) life hazards involved, or that may be involved; (d) facilities for control and extinguishment immediately available, and possible of procurement; (e) weather conditions.

2. If you respond as a municipal fire officer, make it your business to locate the plant security officer (and any others who may be in authority) at the installation, to secure their information, advice and counsel. Get all possible details of the installation, including diagram of storages and other hazards, exposures, water system and availability; communications; supplies of hose, foam and/or other extinguishing agents and equipment.

3. Be sure your plan of action envisages a secondary line of defense, and a path of retreat for working personnel. This latter should be well toward the rear, and any obstructions such as fences, should be breached. It would be well to indicate this path at night by suitable illumination.

4. Any group of fire fighters, holding a hazardous position, should have attached to it a scout, or guide, to act as observer, whose job it is to warn the crew when danger threatens. Some sort of pre-arranged signal should be agreed upon for this warning. It should be remembered that voice warnings alone may not be heard or interpreted by the working fire fighters. Therefore, if available, power voice amplifiers should be used by the warning observer.

5. Men exposed to intense, radiated heat should be equipped with (a) suitable protective clothing; (b) shields or other improvised protection.

Many refineries and oil plants have latest type aluminized asbestos hoods and face-pieces for personnel. With these, and sturdy turnouts or bunker clothes, hose crews can maintain positions nearer the fire for longer periods. In some installations, hose crews that work on the "front line" are obliged to wear protective clothing, even if such precautions seem unnecessary at the time. This is on the theory that a change in wind, or a boil-over, or some unforeseen development will imperil them. Men working in intense heat, with or without special clothing, may be cooled with a heavy fog spray.

6. Men should not operate inside dikes if there is any danger of a slop-over, or boilover, or if the work can be done from the dike or other advantageous elevation.

7. The possibility of explosions or ruptures in pipelines should not be overlooked. It does not take much heat to create a considerable pressure build-up in oil pipe when the oil is held between two valves.

Crews cooling down leeward exposures during hot gasoline storage blaze. Started by a grass fire, a 24,500-barrel tank in the General American Tank Storage Terminal threatened Galena Park, a Houston suburb on the ship canal.

8. Hand lines should not be used where it is possible to employ a fixed one. Except where a line has to be moved quickly, handlines (if no monitors or deluge sets are available) should be lashed, or wedged in such manner that they can be abandoned in an emergency. It is, however, good practice not to leave nozzles unattended if at all possible.

9. Fire fighters should not be allowed to operate on tank roofs, or aerial platforms. If for any reason this is necessary, they should have lifelines with them in case they are cut off from the ladder or stairs. In one refinery fire, hose crews on a catwalk 30 or 40 feet above ground were trapped by a sudden shift of the wind and narrowly escaped death before they could be rescued.

10. If a slopover, or boilover, appears possible, men should be kept a considerable distance from the tank shell, on the windward side. It is bad practice for men to take shelter behind tanks or buildings if there is possibility of their being trapped. Direct flames from a boilover may extend a considerable distance from the fire.

11. Locate fire fighting gear and extinguishing material, not presently required but which may be needed later, a safe distance from the fire so that it, too, will not be caught in any sudden shift of wind, or involvement of a nearby exposure.

12. Don't forget the field first aid station—and staging area for ambulances. In the modern oil plants and tank farms they have these facilities, but it should be a chief fire officer's duty to acquaint himself and his men with the information.

13. Some management insist that men who must work close to fire in these installations wear face and/or eyeshields.

14. The "no smoking" rules should be observed. Smoking may not appear dangerous in the vicinity of a big fire, but it may be highly so if men incautiously shift within range of vapor elsewhere in the installation.

15. Finally, and by no means least in importance, remember to call for additional help **early**. Oil fires may be long drawn out and may require mobilization of vast resources of special apparatus and extinguishing agents, such as foam. Get reserves coming promptly.

The average fire fighter, who daily flirts with death, can appreciate that much of the business of refining and handling petroleum products is a rather dangerous one. Unfortunately, however, not very much has been printed about the loss of life in oil fires. Nor is it always fire that claims victims at refineries, and in oil products storages and movers. Asphyxiation plays a part as well.

Under varying temperatures, crude oil itself throws off over 32 kinds of gases, some being lighter than air, others heavier, and still others the same weight as air. All of them should be treated with respect.

Take casing head gasoline, as one example. This is produced by condensing natural gas which is freed by crude oil from wells. If a cup were filled with this highly volatile fluid and the liquid were thrown into the air it would evaporate completely before reaching the ground, and without leaving a visible trace.

Obviously, such volatility is a serious threat to those who work around such products, and fire fighters who may have to fight fires involving them.

The Petroleum Institute, which keeps the statistical record of the petroleum industry, has just released the figures on injuries within the industry. The data are based on the reports of about 250 oil companies, employing 505,636 persons, who were exposed to injuries 1,095,837,000 hours. On this basis the industry experienced an injury frequency of 9.00 and a severity rate of 1.08 for the calendar year 1953.

The report shows that the ratio of days lost to injuries for the year, including fatalities, averaged 120 days per injury. This compares with 107 days per injury for the year 1952.

Hurricane-Type Storm Keeps Fire Fighters Hopping

It is a rare occasion when fire visits a fire chief's home. But it is something for the books, when a chief's own dwelling is set afire by his own fire alarm system.

That's what happened to Fire Chief Franklyn Gordon, of Port Jervis, N. Y., on the evening of Monday, May 30, 1955.

At 9:15 p.m. fire, caused by a short circuit of a 2300-volt "high line" into the city's fire alarm circuits, paid a visit to Chief Gordon and left a calling card in the form of "slight damage."

The events leading up to this tale began on the morning of the previous Sunday. At that time, Port Jervis, which is situated at the junction of the states of New York, Pennsylvania and New Jersey, was hit by a tornado-type storm.

The blow knocked out power and communications lines and resulted in innumerable calls for the volunteers to furnish auxiliary power, check on short circuits and incipient fires, remove the hazard of broken and fallen trees. The volunteers labored from about 6:00 p.m. until midnight on Sunday in the effort to restore order.

Once again two-way radio proved itself one of the most valuable tools of the fire service. Most of the phones in the area were out and some fire alarm circuits also were damaged. But, generally, radio communications were maintained throughout the emergency.

The Fowler Rescue and Salvage truck, which is equippd for ambulance service, answered a call to Westbrookville, 14 miles away, to remove to the hospital a woman who had been injured by a falling tree. During the 15-mile run from Westbrookville to Horton Memorial Hospital in Middletown, N. Y., the rescue truck went into the ditch and became stuck, while trying to get around fallen trees that blocked the road. It was ultimately pulled out, and proceeded on its journey of mercy.

As a sequel to this incident, on the way back to Port Jervis the truck came upon an accident on the highway involving two cars that had collided. One was afire, with the driver trapped inside.

The rescue unit, which carries a 100 gallon booster tank, put out the fire, removed the injured driver from the car and hustled him and two other persons to the hospital at Middletown. They did not return to their quarters until after midnight.

On Monday morning, Memorial Day, the fire department answered two alarms for short circuits caused when power crews restored service.

All was quiet during the evening, until about 8:00 p.m., when the ticker-tape and alarm bells suddenly went crazy in the fire houses of Maghogomock Hook & Ladder and Neversink Engine Companies. The impulses came in so fast that the tape punch cut a single slit in the ticker tape, about four feet long, and it sounded like a telegraph key. The joker alarm bell, which usually taps out the box number, sounded like a telephone. This lasted for about two minutes.

At 9:15 p.m. the ticker-tape and bells again took off on another frenzied binge, accompanied this time by an alarm from Box 31 or 32 (no one could decipher the numbers). Several trucks were dispatched to the area covered by these boxes but no emergency was found.

While these events were taking place, and the rigs still investigating, a radio call was received from Chief Franklyn Gordon who said "Send one of those rigs down here, will you; my house is on fire!"

Neversink Engine was dispatched by radio and Maghogomock Ladder also started for the chief's house.

Upon arrival there, the offending alarm wires were cut and the fire ex-

(*Continued on page* 943)

There's Humor in The Serious Business of Fire Fighting

A Fire Commissioner Recalls Incidents — Some Funny, Some Embarrassing — From His Big Collection

By PAXTON MENDELSSOHN,
Commissioner, Detroit Fire Department

THE following tales have no particular time sequence. Most of the incidents happened in Detroit, but a few took place in other cities. Of course, the operation of any Fire Department, large or small, is serious business because we are an emergency service to which the public look for efficient protection at all times. No two fires are alike, conditions vary widely, but a Fire Department is not supposed to make mistakes; therefore, let us assume every Fire Department seriously attempts to do a good job.

However, in the daily activities of any Department every so often odd and unusual things occur. Most of them go into history unrecorded and are remembered only by those who saw them, participated in them, or heard them from others. I have related some of these yarns to others, I say yarns because, while true, they can only be classified as yarns, and have often been asked to make a permanent recording of them. Some have a humorous touch, some are just very unusual, and regretfully some of the best cannot be used as the Editor would put the pencil to them. Nevertheless, I shall lean back in my chair, look into the past, and bring back a few samples of the sunny-side happenings that have taken place over the years.

"Dolled Up" for the Occasion

This one cannot happen again; there are no more horses. And even if it could, or did, there would be at least an investigation, if not a trial, and some kind of disciplinary action. But let's go back to the good old days of horses, hose wagons, and steam fire engines. That's going away back. In Detroit, we completely motorized in 1922, and this incident occurred long before that.

Remember, the steamers used coal, carried only a short supply with them; and here in Detroit we had a number of fuel wagons (coal wagons, if you will) located here and there, one horse affairs usually drawn by an old horse and driven by an old fireman, who together would clip-clop to the alarm. Coal was carried in canvas bushel bags. The old driver and the old horse are long since gone, of course, and we will use fictitious names, but which aptly apply.

We will use "Old Mike" for the fireman and "Old Charley" for the horse. They were stationed near "downtown" and were assigned on all "main stem" boxes. In those days the boys had a sense of humor, were a little more playful—or were they? But they wanted to play a joke on Old Mike. He was known to retire early and did, and especially on this nice warm, quiet summer night. Can you remember the straw hats with the ear holes in the rims they used to put on work horses in summer? Well, after Old Mike had retired they took one of these straw hats and put it on Old Charley (the horse), with a blue ribbon under his chin, and put a pair of blue overalls on his front legs, with supporters slung around his neck, and then they waited.

Commissioner Mendelssohn watches his men at work at a recent fire.

It happened about 3:00 A. M. Out went the engine, and out went Old Mike and Old Charley, right to a working fire on "Main Street," with no time to undress Old Charlie!!! To this day, when firemen get together in Detroit, this tale sooner or later comes into the conversation. Of course, no witnesses, no confessions, no trial, and no punishment. Those were the good old days!

A Warm Welcome

This one took place some years later, possibly in the 30s. Again in the summer and before midnight. Fire involved an old three-story terrace converted into a rooming house. It took off fast, and even by the time the first motor apparatus arrived, the two upper floors were well involved, with plenty of smoke and flames. Operations started out dead seriously: occupants were rescued down ladders, but one lone woman was trapped on the second floor window, flames licking around her. It was a life net job. Serious? I'll say it was and, as it developed, the lady turned out to be a modest 180 pounds. The boys whipped out the life net, shouted instructions to jump feet first, and then waited. She jumped promptly, but came down in a perfect swan dive landing spread eagle on her stomach and face. Oh yes, she lived, but broke an arm, bashed in her nose, and had other lacerations and bruises, aside from momentarily knocking the wind out of herself. *She* made the comedy. She got her wind back as the boys picked her out of the net, and then she let go with what was a gem—I cannot repeat her remarks, but her choice of words and the use of English, it is told, was both pointed and humorous. I'll let you fill in the gaps to suit yourself. I got this one from one of the boys who helped hold the net.

Nothing Stumps the Rescue Squad

Next, talk about firemen being good midwives! Here is one for the book. One evening not too long ago this one happened to the men in one of our fire stations housing an engine and ladder company. They were sitting around quietly, shortly after dinner, when a car with a man and woman screeched to a stop in front of the house and the man rushed in shouting, "I'm taking my wife to the hospital to have a baby, but I'm not going to make it." Then things started, showing how efficiently firemen meet unexpected situations. One man opened the ladder company door, the driver ran the ladder truck out, another man drove the car with the man's wife into the house; they put her on a ping-pong table at the rear while the Commanding Officer called the Dispatcher to send over one of our rescue companies, and all hands went to work—sheets, hot water, and all that goes with it. We'll omit the details, but by the time the squad arrived, the Mother had had her baby, everything was taken care of, and off went the mother, father, and baby, to the hospital in the squad car. Then things settled back to routine again. The hospital later reported that it was a perfect delivery and mother and baby were doing fine, thank you! Oh yes, father is back to normal also — but he sure wouldn't have made it in time without the help of the fire fighters.

The Vanishing Load

Here is one that did not happen in Detroit, but because it easily could have been ourselves back in the days when it occurred, I'm including the incident because it's most unusual. Furthermore, I

have never heard of such an occurrence before nor since. Location, quite a large city in Ohio, and about fifteen years ago. I won't name the city, because their faces must have been very red. Actually, nothing too much to be ashamed about; just one of those things. An alarm came in after dark, and off went the companies. The apparatus, an open type pumper, Commanding Officer and Driver up in front, three men on the tail board getting into their fire clothes.

Enroute, as it was told to me, the shut off nozzle on the end of the hose line apparently started slipping down a little at a time, unnoticed by the men in the dark. Just as the engine made a street intersection with a switch in the car track, the nozzle dropped, hitting the pavement at a defective frog in the track, with the pointed end of the frog sticking up just enough to catch the shut off handle of the nozzle. Up front nothing was seen nor felt, but out went the hose, all 1000 feet of it, bowling the three men off the rear end in the process.

It had its serious angle because all three men were more or less bruised and cut (no serious injuries), but can you picture the Commanding Officer pulling up to the box with an empty hose bed and nobody on the rear end? They found the hose stretched down the street for 1,000 feet. The men, of course, eventually got to the hospital for treatment. Oh yes, it was a false alarm!

The Gallantry of the Service

I'll call this one the gallant firemen, and it's an eye witness account, for I was there. Again a hot sultry night in summer. A fire involved a four-story apartment house in a residential neighborhood at about 3:00 A.M. The fire evidently started in the basement locker room and worked its way up to the second floor inside the walls. Although it required a second alarm, the fire itself was soon under control, but not until the halls, stairwells, and several apartments, had been charged with heavy black smoke and heat. There were ladder rescues and people led out by firemen equipped with smoke masks. A number of occupants stayed in their apartments unharmed, but smoke bound. The firemen located all of them and led them out with wet towels over their faces.

As the electric wiring in the basement had burned through in the early stages of the fire, the building was in darkness except for the flashlights carried by the firemen, which is the way, and how, it all happened—coupled with the fear and panic of a certain not-too-old woman. I was standing at a rear door entrance on the ground floor as this lady was led out by two firemen in helmets, rubber coats, and boots, and she with a wet towel over her face. As I mentioned, it was a hot sultry summer night, the lady had on the jacket of her P.J's, a very short one at that, and no trousers (if that is what you call the bottom half). The firemen were unaware of the situation in the dark, and the lady failed to remember.

There they were on the sidewalk, two firemen and almost one Lady Godiva. right in the light of the street light. which momentarily should not have been there at all; or it could have been sporting and gone out, but it didn't. The firemen sized up the situation in a flash. One stood in front and the other like the gallant knight of old removed his rubber coat, quickly got her into it, clamped the buckles, and led her to a residence next door while the other returned to her apartment and got her some additional wearing apparel. It all happened much faster than it takes to tell. There was absolutely no lost motion, or time. I never did find out who the two firemen were, but in my book they should have received citations for gallantry, or something. One really has to be present at fires to find out what really goes on.

Often when my better half is out of the city, I keep out of trouble by spending the evenings at our Central Office. There's where you get some honeys—I mean odd ones—and those that, as I have said, cannot be told.

An Emergency Call

This one pertains to a phone call received by the Dispatcher about 9:00 P.M. not too long ago. I shall have to dress it up a little but you of the fire service will read between the lines and understand. Every Dispatching Office, of course, has a certain routine in order to pin point the location quickly on a phone report. So we will follow the actual procedure:

Dispatcher: "Detroit Fire Department".

Lady's voice: "I's got a fire."

Dispatcher: "What is your address?"

Lady's voice: (Giving a perfectly good house number on a well known street.)

Now I think all of you ask the next question, to pin point it quickly:

Dispatcher: "Between what two streets?"

Lady's voice: (Stating perfectly two prominent adjoining streets)

Then the final question:

Dispatcher: "Whats burning lady?"

And then the bomb burst—as the lady said, "Why, I's on fire and I want a flock of big strong firemen quick"—and down went the receiver.

We have had a number of similar ones, all on the same theme, with variations; some are "phonies" but some actually for fires. And the funny part of it is that these people do not realize that their phone calls are recorded and kept on file for years.

Fast Response

This one was told me by an acquaintance who lives in a large eastern city. He did so to twit me about how good his city's fire department is and to cool me off a bit about how good my own department might be. It happened that his city's fire department *is good,* fast, and efficient, but not quite as fast as he thinks. The story my friend told was that one day walking near a corner he saw a man snap the handle of a fire alarm box and just seconds later a fire engine came roaring around the corner—unbelievable but so. I tried to explain, but to this day he won't believe me and thinks a miracle took place. Now I happen to know the city, the location of the box, and the location of the

(*Continued on page* 940)

One Way to Discourage Illegal Parking.

One year ago last March, the Chicago Fire Department made the headlines when it wasted no time trying to move a parked car from in front of a fire hydrant, vitally needed at a multiple alarm fire. The crew of a pumper simply broke open the car and stretched their hose through it. Early this year an almost exact duplication of that situation occurred, when westside firemen had to run a discharge hose through one door, across a front seat, and out the other door of a carelessly parked car. Luckily for the motorist, who got the ticket being inscribed by the patrolman, the doors were unlocked. The fire was in a furniture store and was a "worker."

Quick Spreading Fire Destroys Building Supply Warehouse

By PAUL DITZEL

A ROARING mid-morning blaze that had the intensity of a fire normally expected in predawn hours lashed through a gigantic building supply warehouse in a congested industrial area east of the downtown Los Angeles on July 12.

The fire had such a hold when first-in firemen from Engine 17 a few blocks away arrived that a full second alarm was immediately requested. Within six minutes an additional three engine companies were called.

The blaze pointed up once again how large losses can occur when buildings lack adequate fire separations and first aid fire-fighting safeguards. These factors, plus delayed notification and highly inflammable contents, were present in Los Angeles when open burning in a metal trash drum touched off a three-alarm fire at Mason Supplies Inc., wholesale dealers in building materials and a wallboard firm occupying a smaller portion of the structure.

The first alarm was received at 10:03 a.m. when Box 1456 at Bay and Wilson Streets was pulled. The box has been a frequent source of false alarms but Chief Fred Newjahr, of Battalion 7, saw the heavy black loom-up as soon as he left his quarters at Engine 17. (Ironically, this day was Chief Newjahr's first as a battalion chief and he hadn't yet had time to make his customary rounds.)

The fire building was nearly a block square. It was of sheet metal on wood construction, one-story high, except for a two-story stucco office in the northwest corner. The roof was composition on light sheeting atop wood trusses. The structure was unsprinklered and contained a negligible amount of hand extinguishers. Moreover, there was no automatic warning system which would have sent in an alarm.

Assistant Chief Ronald T. Robertson said the converted warehouse type building contained a number of mezzanines stocked with builders and hardware supplies, all difficult to reach with fire streams. He said the building was at least 40 years old and the vast open areas spread the blaze with amazing speed.

The building was well ventilated when the first apparatus arrived and the primary problem was one of checking the spread to exposures. A 15-mile-per-hour wind from the southwest whipped through the open warehouse doors on the side facing a railroad spur track where four boxcars were spotted.

The most severe exposure was on the north side where a 35-foot-wide street separated the warehouse from a one-story school building. The flames were also reaching toward a two-story brick manufacturing occupancy on the east.

Battalion Chief Newjahr put four companies to work on the north side of the fire, including one wagon battery. A water curtain was laid down along the street and, except for the fire-resistant construction of the school, that building might have ignited. As it was, a marvelous check was made along this front and none of the schools' windows was even cracked.

When the exposures were covered, the attack on the main body of fire began, although it was apparent from the very outset that the warehouse could not be saved. Fast work by the first and second alarm companies in taking positions enabled them to have their lines set up by the time Assistant Chief Robertson and Frank E. Winkler, headquarters assistant chief engineer, arrived at the scene. Chief Robertson, on his arrival, asked for the three additional engine companies.

One of them, Engine 4, was changing quarters to Engine 17 and its captain, Charles B. Adams, wisely swung close to the area of the fire en route, so was on the fire ground by the time Chief Robertson received the additional help.

While Chief Robertson was hurrying

L. A. F. D. Photo by Jim Kalpakoff

Open burning of trash in a metal drum is believed to have touched off this three-alarm fire in a Los Angeles building supply warehouse.

L. A. F. D. Photo by Jim Kalpakoff

This mid-morning blaze in a Los Angeles building supply warehouse had the intensity of a fire expected only in predawn hours. No fire separations, a lack of first aid fire fighting safeguards and a delayed alarm resulted in this three-alarm fire.

along the north exposure of the fire, a wave of blistering heat from an exploding drum of paint thinner caused a serious two-inch burn on his right hand as he pulled his turnout collar up around his head. Three other firemen suffered less serious injuries.

The flames were fed by vast quantities of stored building board, tar paper, stacks of garden hose, miscellaneous building supplies, hardware, and paints. Several minor explosions in the stocks of paint and thinner helped spread the blaze.

Subsequent investigations by the Fire Prevention Bureau and Arson Detail officially labeled the cause of the fire as "unknown," but they believe that open burning in a metal drum on the railroad loading dock was a primary factor in the start of the fire. Officially, too, the Los Angeles Fire Department records show the damage "in excess of $10,000" and listed the fire as one of the city's major ones for the year.

Investigators learned, too, that burning in the trash barrel had been going on for several weeks, despite the complaint of a workman at an adjacent firm who warned that the trash fires under the partly-covered loading dock might touch off a serious fire. So fast was the spread of the fire that a worker, who reportedly ran to telephone the alarm, barely got out of the office before the place became involved.

Following is the log of alarms for the fire:

10:03 a.m.—Box 1456. Bay & Wilson. Engines 17 (manifold), 30, and 24. Trucks 17 and 30. Salvage 24. Squad 23. Battalion 7.

10:06 a.m.—Full second alarm ordered by Chief Newjahr. Engines 23, 25, and 28. Truck 24 and Salvage 2[illegible]. Moveups: Engines 4-17, 7-30, 16-24, 45-28, 32-16; Trucks 4-17 and 28-24.

10:11 a.m.—Three additional engine companies ordered by Chief Robertson. Engines 4, 7 and 16. Moveups: Engines 2-17, 8-30, 6-24, 44-4 and 70-2. Trucks 10-30 and 26-10.

L. A. F. D. Photo by Kalpakoff

North exposure where fire was at its worst. Note the protecting water curtain as Los Angeles firemen battle to check flames from spreading to school building on the right.

L. A. F. D. Photo by Jim Kalpakoff

Unsprinklered building lies in almost total ruin. Note large open areas and mezzanines which impeded firemen, but not the fire.

Personnel Cuts Protested

Fire Chief Sidney F. Lawson, of Montpelier, Vt., protested vigorously an economy measure, so called, of this city council, which would force him to remove a fire inspector and further deplete his already understaffed force. In his efforts he was backed by some 476 citizens who signed a petition protesting the move.

Despite the objections, the city council was adamant although it voted a delay of one month to permit a re-examination of the need of a full-time inspector, and to reopen a study of an injury that partially disabled the inspector due for dismissal, a few years ago.

Presentation of the petition was but one feature of the debate on the fire department issue, which was waged in the council.

Supporters of the protest and petition pointed out that much commercial property in the city is in very poor condition, with many fire traps; a condition that demanded frequent and thorough inspection of fire hazards. Proponents of the economy cut, which also involved reduction in police personnel as well, claimed that the majority of Vermont's communities do not employ inspectors. However, to emphasize the wisdom of retention of the inspector, it was pointed out that in a four-year period before the appointment of a full-time inspector the Montpelier department responded to 822 calls, involving a property loss of $243,356. This was compared with a similar four-year period with a full time inspector, which showed the department responded to 587 calls, with a property loss of $127,817.

Notwithstanding protest also of the rating bureau, which indicated that a reduction in personnel would adversely affect the efficiency rating of the department, the council voted for the "economy" measure.

Under the present platoon system, the on-duty crew consists of five regulars and an assistant chief. The total force consists of the chief and 15 full-time paid firemen and 20 enrolled volunteers. The Underwriters' standards for such a community call for 18 regulars and a 33 call-men force.

Salvage Warehouse Ruined by Fire

A three-alarm fire in San Diego, Calif. destroyed a Salvation Army warehouse, a residence, and damaged three other homes and two sheds on July 20.

The warehouse at 18th Street, Commercial and Kearney Avenues, contained two new waste paper balers, an air compressor and donated articles of salvage ranging from furniture to baled waste paper and magazines.

The night caretaker at the warehouse was awakened shortly before midnight by an explosive sound. Passersby helped him drive eight Salvation Army trucks to safety. Army officials estimate damage to their warehouse at $50,000.

PAUL DITZEL

U. S. ARMY TRAINS KOREANS IN MODERN FIRE CONTROL METHODS

Military Fire Apparatus Turned Over to Qualified Fire Fighters

By Franklin R. Helt
Fire Prevention Engineer, 8th Army

HERE in Korea an intelligent approach to the problem of teaching modern fire methods to Korean citizens is being made. In the City of Pusan the personnel of the 8075th Army Unit have accomplished remarkable results in the short six months before their "phase out" and return to the United States.

Pusan is a typical Korean city, vastly overpopulated with refugees, disease and the old spoils system people. The water supply was never adequate by our standards, and water actually was sold from carts on the streets during the five-hundred-percent over-population period, due to refugee influx. The local policy of assignment of mediocre policemen to fire duty is an elementary mistake which is in the process of being corrected. The Fire Captain with outside interests will eventually become an outcast.

The old policy of blocking-off a blazing structure, while necessary with their past equipment, is in need of revision along more modern lines. The U.S. Army is assiduously leading this educational program. As Army fire fighters phased out, their equipment was turned over to Korean Municipalities and to the ROK Army. And not just bare equipment was transferred. The U. S. Army has trained both ROK Army and city fire fighters, and these trained men were turned over with the U.S. Army equipment on which they actually responded to numerous civilian fires. Communication and maintenance personnel were also trained and and returned.

To give an idea of the enormity of this training, the following elementary policy changes are being recommended to city authorities as being basically necessary in order to build a modern city Fire Department:

The Pusan Fire Bureau be removed from Police supervision.

A training school which teaches actual fire fighting, along with theory.

A Fire Officer's Manual, to be printed in Korean and distributed.

A Prevention Bureau to advise lawmakers and the public on new methods.

A Mechanical Maintenance Bureau with purchasing agent responsibilities.

Fire Officers selected from quick-thinking driver-operators.

Driver-operators be selected for their mechanical knowledge as well as their knowledge of the city.

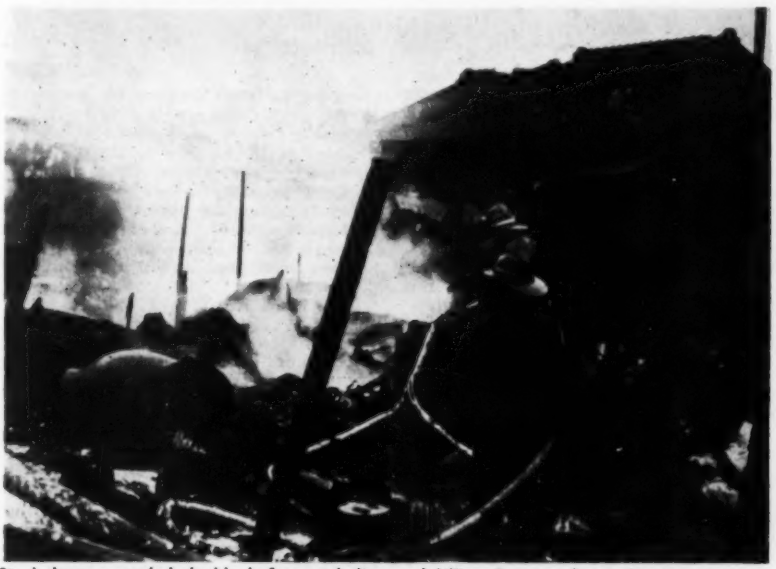
Provision be made for drafting water at most city street and stream intersections and "quick dam" training be given in utilizing tarpaulins and sand bags.

A weekly shift change, instead of daily, be inaugurated to discourage blaming slipshod maintenance of equipment on "the other shift."

It is believed that many unexplained Korean fires can be traced to improperly stored charcoal, subjected to small amounts of heat, or fish oil. This perfect set-up for inducing spontaneous ignition is present in every Korean home.

Experience with Oriental thinking in Japan convinced me that our Oriental allies are extremely anxious to learn about our modern technology and applicable fire prevention methods. The old Navy "Chemistry of Fire" film was edited to a twenty minute short, a sound track in Japanese was super-imposed and it was shown to Japanese employees of the Yokohama Engineer Depot. Many of the viewers were old timers who had built tanks and cannon for Tojo and are now rebuilding equipment for U.S. Army Engineer, General Sam Sturgis. Their appreciation was evidenced by many warm handclasps, given with profuse bowing, after the showing of this film short. And our petroleum fires just pulled up and stopped happening thereafter.

The U.S. Army is making a concerted



Steel drum expanded double before exploding and killing five people at this fire in Pusan, Korea. It contained stolen gasoline concealed in house where fire originated. The 8075th U. S. Engineering Fire Fighting Company confined the fire to seven tinder box homes located with a sixty square foot lot.

Ruins of fire showing typical tinder box construction characteristic of much of Pusan, Korea.

Korean fire chiefs, representing 26 communities in Kyongsang Namdo Province, are graduated in modern fire methods class conducted by the United States Army. Seated (left to right): Col. Kim, Col. Chang, Captain Pokorney, Mr. Holt and Col. Choi.

effort to prevent future conflagrations from adding to the misery of our ROK friends. It is believed this effort will long be remembered here as a common sense approach to relieve suffering. It could convince these people that U.S. and Uncle Sap are really not synonymous and that we are genuinely interested in their future welfare as a Democratic Nation.

Charleston Has Costly Terminal Fire

The worst waterfront fire in the history of Charleston, S.C., destroyed the port's Tidewater Terminals, caused two deaths, and threatened much of the city on June 17, last.

Unofficial loss to the terminal was "at least $1,250,000" and to merchandise stored in the warehouses, $1,500,000.

The Tidewater Terminals consisted of a series of piers and bulkhead structures joined in the form of the letter "E," located on Charleston's waterfront along the Cooper River channel.

The terminal space housed the Tidewater Terminals, Inc.; the engineering section, Charleston District Engineers Office; Norfolk, Baltimore and Carolina Line, and Ellison Brokerage Co. A small freighter, the Florita, was discharging sugar at the southernmost pier, where the fire reportedly originated. Quick action by the ship's officers early in the fire saved the vessel, which was moved into the channel.

Cause of the blaze, which was spurred by a 20-mile NNE wind that occasionally reached 40-mile gusts, was not determined. It was first observed at the southernmost pier. From there it quickly engulfed the cavernous interior of the frame warehouse. Thence it spread to the central pier which was immediately adjacent. This, too, was soon involved. Then the main office section, which spanned the three piers at the shore end, caught fire. After this, the blaze, working against the wind, spread out along the northernmost pier.

The combustible contents of the structures and the structures provided a hot, fast spreading blaze that defied the efforts of some 550 fire fighters and volunteers to contain it. Burning brands were carried shoreward on the strong wind, to start a number of other fires and to threaten property over a wide area. Flaming cinder and hot ash fall-out extended westward across downtown Charleston, reaching areas across the Ashley River, two miles distant from the fire.

Fire Chief Norman G. Olsen, who directed fire fighting operations, sounded a general alarm soon after the initial response of fire fighters. The first alarm was received at Fire Station 2 at 10:53 A.M. The general alarm brought all 10 of the city's fire units. These were soon joined by forces from neighboring communities, the Coast Guard, Air, Navy, and tug boat companies.

One piece of apparatus each came from the Mount Pleasant, and St. Andrews Fire Departments; the Navy Minecraft Base; the Naval Shipyard, and Charleston Air Force Base. In addition, three Coast Guard vessels fought the blaze from the waterside. A number of tugs and small craft joined in the operations.

Under the Fire Department's general alarm plan, men and equipment from the suburban stations moved into the city stations to cover. These auxiliaries answered 12 alarms while the main force of fire fighters was engaged at the Terminal fire.

Local military establishments sent heavy detachments of personnel. The Navy Minecraft Base and eight ships tied up at the base, sent a total of 288 officers and men. The Coast Guard had between 30 and 40 men at the scene; the Airforce Base sent 18 firemen and 19 air policemen and a helicopter which was used to spot outbreaks of other fires in the exposure area. Ambulance service was reinforced by units from Navy, City Police, County Police, Air Force and private firms. Many men were hospitalized from injuries received in fighting the fire, 23 of them remaining therein over 24 hours. Scores were treated at the scene. Two men lost their lives: an executive of the Terminal Company and a City Police Private who reportedly entered the burning structure to locate the executive who it is said had gone back to attempt to save records.

By 11:30 A.M. the northern terminal building was ablaze and the southern terminal had collapsed. By then, fire fighters, realizing the hopelessness of stopping the fire, were concentrating on saving nearby buildings. Exposed offices of the South Carolina State Port Authority, the Palmetto Shipping Co. and Waterman Shipping Co. were ignited by blazing brands and radiated heat.

Fires were reported in scattered sections of the city from Queen Street to Trade Street. A smoldering fire was reported in St. Michael's Church steeple, some five blocks away from the main blaze. This was quickly extinguished by fire fighters.

Business firms stationed personnel on rooftops; homeowners in the area also were out to guard against flying brands, some of the volunteers using garden hose successfully in this effort.

Masks Must Be Used in N.Y.

Use of breathing apparatus in the New York Fire Department will be "absolutely mandatory" according to Fire Commissioner Edward F. Cavanagh, Jr.

The Commissioner recently told a large group of probationary firemen that he intends to get 1,000 more breathing devices and said he is tired of seeing an "all-too-frequent, tragic" sight of fire fighters overcome at fires.

"We have come to the end of the road of complacency as far as smoke poisoning is concerned" the Commissioner concluded, adding that the department's new year-round training program in the use of masks will shortly be inaugurated.

Navy and civilian tugboats and Coast Guard ships pour water on the blazing million-dollar fire which destroyed the Tidewater Terminal docks and warehouse at Charleston, S. C., on June 17.

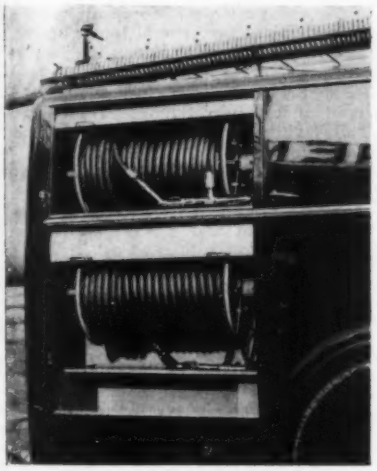
DUTCH FIRE DEPARTMENTS STUDY WATER FOG TECHNIQUES

Early Observations Show Advantages of Fog on Many Types of Fires

By H. de Jong

OF the vast crop of war inventions, the American method of fighting fire with the aid of high pressure spray, or mist, is one of the most interesting. Like many new techniques, its discovery was purely accidental.

Its originator, a California farmer, was busy spraying his vineyards with Bordeaux mixture when he was sud-



How hose racks with fog guns are mounted on fire trucks in The Netherlands.

denly alarmed by his children. On looking up he was horrified to see that the haystack immediately adjacent to his house was fully ablaze. With the small spraying apparatus, he rushed to the scene, and in a fit of hopelessness commenced to spray the mixture into the blaze.

As though by some miracle the flames dwindled and petered out. Flushed with success, he related the incident to neighbors and before long the local fire brigade came to hear of it. The rest of the story is incidental.

On investigation, Bordeaux mixture was found to be a not particularly effective extinguisher. However, it was proved that a fine spray of water is many times more effective as a fire extinguisher than an ordinary stream of like discharge.

Once this fact was established, the technique developed apace. The U.S. Navy, for instance, was not slow in setting up a number of fire fighting training colleges to teach the new method of fighting fires with spray. A case in point is the fire on board a ship carrying munitions in Brooklyn harbor in the summer of 1944, when two sailors were able to control the flames within five minutes. The fire fighting agent used was spray, and Brooklyn was saved from a probable disaster.

No one is better qualified to define the meaning of "mist" or "fog" than a Londoner, but the phenomenon is not uncommon in Holland either.

Editor's Note: **It is always refreshing to learn how "the other fellow is doing it." It frequently happens too that that "other fellow" may have something on the ball, after all.**

For this reason, and to post our American and Continental readers on the developments in the field of water fog, vapors and sprays, we submit this article by H. de Jong of Verboomstraat 101. B, Rotterdam, The Netherlands.

No attempt has been made to bring Mr. de Jong's manuscript or nomenclature into line with American terms and idioms. We doubt if this is necessary. The author's grasp of American terminology, and his knowledge of our use of this particular extinguishing agent is more than sufficient to express his thinking in the following observations.

Mist is, in fact, drops of water so minute that they remain almost suspended in the atmosphere. It is very efficiently produced in nature by cooling water-saturated air to below dew point (the temperature at which the air is saturated with vapor). The vapor condenses, thus producing mist, or haze, or giving rise to the formation of clouds. On further cooling these clouds develop into rain, sleet or snow. Mist can also occur with the influx of damp air across cold areas, a phenomenon witnessed quite frequently along the Dutch coast, particularly in autumn.

Mist can also be produced artificially in much the same way as it is by nature, either by causing the water jet to rotate rapidly as it leaves the nozzle or by causing two or more jets to impinge on each other at great speed.

Obviously it is important that the fire fighting expert know the degree of atomization at a given pressure and the proper pressure necessary for nozzles to give affective service.

Tests carried out by the U.S. Navy and Coastguard provide conclusive proof of the potentialities of mist as a fire extinguisher. Data from forty leading American fire brigades using mist-sprays as standard equipment disclose that this method has outstanding advantages. These fire fighting units generally use fog when dealing with indoor fires, especially those accompanied by thick smoke. Fat and oil fires are likewise effectively dealt with by means of fog. Some of the brigades report favorable results when using fog on factory buildings, while others emphasize the small amount of damage resulting from the use of fog on fires involving chemicals and electrical installations.

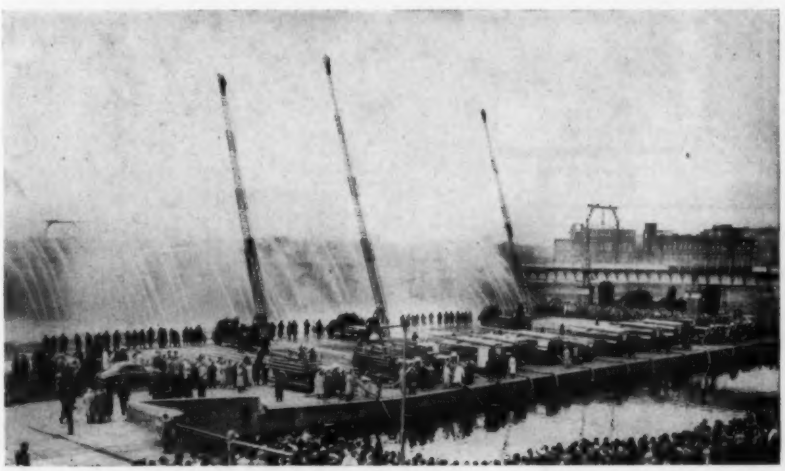
The classical method of fighting fires with a water jet is largely based on moistening and keeping wet flammable materials. Apart from moistening, the introduction of water withdraws heat from the source of the fire. If it were possible, for instance, to absorb all heat generated by combustion, there would be no heat left to spread to fresh, flammable materials. For this reason, the water should be vaporized as quickly and completely as possible. In this way a considerable amount of heat is withdrawn, and the water on being turned into steam expels the oxygen essential for combustion. Thus, the logical conclusion is reached that a mechanical conversion of water into cold steam is more effective than a closed waterjet. The combined surface of a large number of minute drops is considerably larger than the surface of a closed waterjet.

Application of fog substantially diminishes heat and quells the flames and at the same time permits closer approach to the source than is possible with the closed waterjet. It is obvious that the application of fog reduces water damage to a minimum.

It stands to reason that the pressure necessary for atomization in high-pressure fog fire fighting makes heavier demands on the pumping equipment and fire hose.

The modern method of fire fighting

(*Continued on page* 941)



Demonstration of fire fighting equipment at Rotterdam.

TWO FORCES UNITE IN CHECKING THREATENING GAS PLANT FIRE

Long Beach and Los Angeles Fire Fighters Bring Big Blaze Under Control After Six-Hour Battle

By Cliff Dektar

LONG BEACH and Los Angeles City firemen teamed up early on the morning of July 22 to make a fine stop of a booming refinery fire in the Los Angeles-Long Beach Harbor area.

A fire in the Wilmington Gas. Co., 1355 W. Ocean Blvd., on Terminal Island, started shortly before 1 a.m., when a high pressure pipeline broke. Butane, propane, and other volatile liquids are processed at the big refinery.

At 1 a.m. the L.A.F.D.'s San Pedro district signal office received the alarm and rolled Engines 40 and 86, Fireboats 2 and 3, Acting Batt. Chief Trig Thorsen.

Meanwhile, the Long Beach Fire alarm center also received the alarm at 1:02 and, since the city limits actually bisect the refinery, responded with full assignment, including Engines 3, 6 5; Truck 2, Fireboat 1, Squad 1, and Batt. Chief Glenn Jefferson.

Engine 6, under Capt. John Montgomery, arrived just ahead of the first-in L.A. equipment and Capt. Montgomery immediately asked for a second and then a third alarm assignment. The multiple response brought Engines 2, 10, 7, 9, Hose 1, Batt. Chief William Mendenhall, and Long Beach Chief Engineer Frank Sandeman.

L.A. also called for a second and additional equipment, including Engines 38 and 49, Boat Tender 2, and Asst. Chief Joe Quinn, Division I, was dispatched.

Meanwhile the series of explosions had routed several hundred sailors out of their beds in nearby U.S. Naval Base barracks.

All five men working in the plant escaped. Two operators, Edward Dempsey and Lester Graff, risked their lives to reenter the burning plant, to shut off two main valves, which helped firemen a great deal.

By now flames 400 feet high were leaping through parts of the plant and thousands of gallons of butane, propane, and gasoline were in danger of going up. In addition to these tanks filled with highly flammable liquids on the refinery grounds, the naval base and big Ford Motor Co. assembly plants were endangered for a time.

"It was a highly explosive situation to say the least," commented Chief Sandeman. "We made extensive use of monitors to cool the entire burning area before we actually moved in to extinguish the flames.

"In one sector, a 75-foot high cracking tower caught fire several times, but each time we managed to knock it down."

Although the fire was entirely in the city of Los Angeles, Long Beach firemen under Chief Sandeman cooperated fully with the L.A. City crews under Chief Quinn.

"I have never seen men from two 'strange' departments work so well together," commented Chief Sandeman. "Chief Quinn and I were in constant communication with each other. I think all the men from both departments should receive high praise for their work."

Final control of the dangerous blaze came at 6 a.m.

Company officials said damage would run near $750,000.

Investigator George Ayanian of the L.A.F.D. Arson Bureau, said that the fire was caused when volatile gases under pressure caused the rupture of a pipeline in the processing unit.

L. A. F. D. Photo

Fire burns around cracking towers at Wilmington Gas Co. in L. A.'s busy harbor district. Firemen from L. A. City and Long Beach Fire Departments subdued $750,000 fire.

Volunteers Attack Metropolitan Plan

Creation of a metropolitan fire department in Western New York portends a possible loss of independence by volunteer groups, Gerald Gleason, chairman of the Erie County Fire Advisory Board told the 47th annual convention of the Southwestern Association of Volunteer Firemen meeting in Cheektowaga, N. Y.

Gleason noted an editorial in the Buffalo, N. Y., "Courier-Express" which said a metropolitan fire department could furnish better protection, probably at less cost, than volunteer companies. The editorial noted that piece-meal development of tax-supported fire companies is in the offing.

"Be ever on guard against legislation which will take away any of your independence," Gleason told the firemen from volunteer organizations in Erie, Cattaraugus and Allegany Counties of New York State.

Gleason said the volunteers' efficiency is predicated on their independence and contended that volunteers are trained as well as if not better than members of many paid departments.

The group elected Clyde Lee of Cattaraugus, president. Other new officers are: Vice President Fred J. Royce of Cuba and Director Howard Preston of Cattaraugus.

PAUL DITZEL

NEW BATTERY PUTS NEW LIFE IN FIRE EMERGENCY OPERATIONS

Newest Development May Have Marked Effect on Fire Service Communications . . . Ignition . . . Lighting . . . Power

By Dr. L. Grant Hector*

Editor's Note: **Over the years, the problems of fire service communications, response and operations of fire apparatus of all categories, lighting the scene of emergencies, and powering electrically operated fire and rescue equipment, have grown apace.**

Each advance in these vital elements of fire suppression has placed added importance, and added load, upon an all-too-frequently overlooked fire service essential—the common storage battery.

It is possible that a new type battery, recently placed on the market, will have a major place in meeting the increasing demands of the fire service for electricity required for the growing list of applications, we are told. Checking on its possibilities and limitations, the editors requested Dr. L. Grant Hector, a highly qualified electrical scientist, to prepare a brief story of this product, its implications and its applications.

Dr. Hector has done just that. Shorn of scientific technical terms, Dr. Hector has presented his message as "an old fire fighter, who tackles new problems."

VOICES shout, feet hammer on the old board sidewalks, a big gong sounds, two men race frantically for valves that will turn high-pressure water from a spring-fed reservoir in the hills into the water lines. Two hose carts, one a two wheeler, one a four, tear down the street, first slowly as they start with one or two men, then faster as more men come flying to the carts to help push or pull them. The writer is a young kid on the two wheeler. We are the Independent Fire Company of Clarendon, Pennsylvania, and we must beat the Brown Hose to the fire. This time we do and, together, by sheer man (and boy) power, we do get the fire out without losing more than a house or two. Yes, was forty years ago in a small town in Western Pennsylvania.

In 1955 an unpredictable hurricane shifts course and wipes out the electric power system of a large metropolitan area. The city is in darkness; the telephones are out; flash floods sweep through the streets; part of the water system is disrupted. But miraculously the fire engines, the hook-and-ladder trucks, the big combinations appear. water and chemicals pour on the places where they will be most effective, fire fighting machines are released and dispatched to other emergency areas as conditions better at this disaster point and worsen at another—all with the speed, smoothness and effectiveness that you would expect to see on a practice run on a sunshiny day in May.

Not a fair comparison, you say. One was a small town forty years ago, the other a great metropolitan area today. Right, but the facts are nevertheless true, and even that small town in Western Pennsylvania is not far behind the big city in fire fighting effectiveness today.

The difference is due to the development of many, many things. Improvement in communication systems permitting the transmission of the alarm from either fire box or telephone to fire alarm headquarters. Development of automobiles and adaptation to trucks and thence to all the mobile fire fighting vehicles. Portable gasoline engine-driven electric generators to provide power and light on location. Self-powered water pumps to pull water from local streams and reservoirs and to boost pressure on water from remote water systems that escaped damage. Two-way radio systems between the central fire control systems and every vehicle both at the disaster and in transit, and between the chief at the point of disaster and key men close to the fire front.

Every piece of equipment listed above either starts or operates from batteries. Let someone go through the system and steal all the batteries, and the fire department will be a dead duck.

New type battery powers emergency generator. Fire Chief Paul O. Wetzel, of the Hawthorne, N. Y., Fire Department tests a sintered-plate, nickle-cadmium battery which powers standby generator for the community's fire alarm system. The recent hurricanes and floods put heavy strain on fire communications, proving many times over the importance of auxiliary, standby power. Batteries in such equipment should hold their charge for long periods of inactivity.

What a good many of our fire fighters have overlooked is the fact that nowadays we are expecting an awful lot from batteries for modern fire apparatus.

Originally batteries were designed for one purpose—to furnish ignition for the gasoline engine. They were not even required to furnish current for illumination. Every old timer will remember the carbide lights. He will remember, also, the hand-cranked siren.

These were the days, BG, before gadgets. It wasn't long before another heavy load was dumped on the battery—the task of kicking over the motor. It was bad enough with the Model T, but it was potential disaster on the old heavyweight pumpers and the tractors.

But those were only trial days for the battery. From that time on came the electric siren, the flashing red lights, the steady front and the red rear lights, the stop light. The old dash search light, carbide-powered, gave way to the perky but powerful electric spot and search lights. And then many fire fighters fondly hoped that the end of the insatiable demand upon the battery had been reached.

How wrong they were. First came additional lighting, for compartments, for backing, for signaling between driver seat and rear end and, most momentous of all, came radio. Not just receiving, but two-way mobile radio, really powered to receive and push out messages over long distances.

Then came changes in chargers and the introduction of alternators. And the little old battery took on importance to the point where this aspect of fire apparatus specifications took priority when the manufacturers, fire chiefs, and insurance rating people and underwriters got together. (Committee on Fire Department Equipment—Ed.)

Out of these meetings came general agreement that the apparatus battery should have "capacity commensurate with the size of the motor." The committee also added this qualification—"Where apparatus batteries will be used in conjunction with radio operation, consideration should be given to additional generator and battery capacity." Many detailed specifications were proposed in an attempt to insure adequate performances for all purposes.

New demands will continue to be made on fire fighting vehicles, and in turn on their batteries. Already electronic traffic control is being tried out, and electrically operated small tools and devices are being introduced; such, for example, as the powered hose-reel.

So we check through every piece of equipment in our fire fighting arsenal for battery requirements and for battery maintenance and then we write a list of ideal goals.

At the moment that service is needed, the battery must be capable of giving the required current, large or small, at the proper voltage. This may mean low internal resistance. Great ability to hold charge will be needed for jobs where frequent recharging is not practical. The ability to take charge rapidly without damage to the battery, "hot-shot charging," is needed where batteries are based hard at high rates. The battery must perform adequately at both high and low extremes of temperature. Use of the battery should be as foolproof as possible.

A newly introduced battery appears to be particularly fitted to meet these re-

*Dr. Hector is Vice-President in Charge of Technical Operations of the Sonotone Corporation and one of the nation's foremost scientists specializing in both batteries and electronics.

quirements. It uses new construction even though it is based on chemical operations that were known fifty odd years ago. Its active ingredients are nickel and cadmium with caustic potash for the electrolyte. Chemically it is similar to the Edison battery which uses nickel and iron for active materials. When the chemistry of the system was discovered around the turn of the century, nickel-cadmium batteries were built using a construction similar to that of the nickel-iron batteries. The nickel-cadmium system had better voltage characteristic but was somewhat more expensive than the nickel-iron. Both batteries have been sold in limited quantities for the past fifty years, both in the United States and in Europe, but their virtues as compared to lead storage batteries were not great enough in many applications to offset their higher initial costs.

One of the first fire chiefs to investigate the new sintered-plate, nickle-cadmium battery was Irving Merrick of Poughkeepsie (shown here with open battery compartment). This initial test installation in department's 100-foot aerial, occupies minimum space and reportedly has given good account of itself.

Then in the late 30's, German engineers, looking for new fields in which to exploit their newly developed art of sintering metal powder, spread out a thin sheet of nickel powder, passed it through an oven and so produced a porous grid for holding the active material of a storage battery plate. To the naked eye, the plate looks solid. Pick it up and you find it very light—it is 80 per cent porous. The holes are irregular and too small to be seen without powerful magnification. By electrochemical means, active nickel can be placed into one of these grids to produce a positive plate, or active cadmium to produce a negative plate. The active material is literally plated on the inside walls of the millions of microscopic cavities in these plates. Electrolyte touches the material on an area many, many times greater than the apparent surface of the plate. The plates are very smooth and can be placed within a few thousandths of an inch of one another without touching at any point. The resulting structure is mechanically strong; the electrical performance remarkably good.

Basically, the problem was to get the battery out of the laboratory and into production. The Germans did make many good batteries, but it was hardly more than on a laboratory scale. They had these batteries in their V2 rockets and in their jet fighters that appeared near the end of the war. They also had some battery failures at critical times. The problems of production of a quality product turned out to take much more time and effort than the development of the original basic idea. Had the Germans won the Second World War, they would undoubtedly have solved many problems shortly thereafter. Actually, several years elapsed before very extensive work began on the production problems, although some work by both individuals and corporations, both in Europe and the United States, gradually got under way.

Successful production came into sight in the United States just previous to the start of the Korean War, and very small quantities of batteries found their way into the civilian market. (The first civilian application was to operate a strobe light for photographic use.) At about this time, the first of the missiles in our guided missile program was in need of better battery supplies, and special sintered-plate nickel-cadmium batteries were developed and supplied for this purpose. The new battery is just now beginning to be supplied for aircraft, both military and commercial. General commercial and industrial distribution could not start until after the Korean War ended and is just now gaining impetus. Batteries are going into trucks and buses, boats, mining machinery, railroads, industrial equipment, farm implements and, needless to say, fire fighting apparatus.

One-in-a-Million Rescue Call Gives Firemen a Rough Time

Culver City, Calif., firemen recently were handed one of their most difficult, and certainly most horrible, rescue problems when they received a call of a worker enmeshed in the grinder of a cement mixing hopper.

When the alarm was logged at 6:50 a.m., Acting Captain Charles Gibson and Engineer Art Brice responded four blocks to the Blue Diamond ready-mix concrete plant, just outside the city limits of Culver City. Although the alarm was technically not theirs, the firemen responded on the informal mutual aid plan between them and the Los Angeles County Fire Department. The county was notified and it dispatched Engine 58 and Rescue 18.

Upon arrival, the Culver City Squad Company found that Warren Murray, a Blue Diamond truck driver, had slipped at the edge of the hopper and tumbled five feet onto the revolving corkscrew blades which were a fraction of an inch off the hopper floor.

Murray's screams prompted a fellow worker to turn off the power, but in the few seconds that he stradled the rotating screw, it ripped through his trousers and chewed both legs which were wrapped grotesquely around the corkscrew. Murray's right arm also was horribly bent around the screw.

Murray was still conscious when firemen arrived and remained so throughout the long ordeal that followed.

The corkscrew was horizontal in the 6 foot square plywood bin and an 8-inch layer of powdered cement covered the floor. The screw carried the powdered cement from the hopper onto a bucket conveyor belt outside. If the power had been shut off an instant later, Murray would have been pulverized between the bulkhead of the bin and the screw, firemen said.

The carpet of powdered cement acted as a tourniquet and sealed off the jagged gashes in Murray's arms and legs, otherwise he would have bled to death in a few minutes. Passing doctors and ambulance attendants administered a total of three shots of morphine, but Murray's shock was so deep that none were able to put him to sleep.

Captain Gibson and Engineer Brice lowered themselves, together with a portable acetylene cutting torch from the squad, into the hopper. They were forced to burn through the foot-thick

(*Continued on page* 913)

Photo by Bill Wilde

Culver City, Calif., firemen were forced to burn through this massive corkscrew to release a worker who fell on it while it rotated. The screw horribly chewed his body clear up to his waist and pinned his right arm, before a fellow worker shut it off.

DANGEROUS BEL AIR BRUSH FIRE CAUSES ALL-OUT RESPONSE

Los Angeles Fire Fighters Check Biggest Brush Fire in City in Many Years

By Cliff Dektar

LOS ANGELES firemen battled the biggest brush fire in many years entirely within the city on the afternoon of July 28.

The blaze, believed to have been started by a careless motorist who tossed a cigarette into tinder dry brush, threatened the fashionable Bel Air residential district in West Los Angeles and caused one of the worst traffic jams in the history of Western L. A.

Whipped out of control by brisk winds in Sepulveda Canyon, the fire finally was contained by 150 firemen using 48 pieces of equipment, but only after it blackened 300 acres of the Santa Monica Mountains.

First reports of the fire came to Mountain Patrol Headquarters from a department call box at the south end of the Sepulveda Blvd. tunnel at the crest of the mountain range which separates the San Fernando Valley from Beverly Hills, Hollywood, West Los Angeles, and Santa Monica.

A full assignment of Engine 19, Tank 19, Engine 37, Booster Tank 37, Tank Patrol 2, and Battalion Chief Thad Whippo was dispatched.

At 2:10 p.m. Engine 19 arrived at the location 1½ miles south of the Sepulveda Tunnel and immediately requested assistance; Engine 71, and Tank 21 responded.

A few minutes later, Asst. Chief Forest Moore, Division 2, arrived and requested additional help, and Engine 88 and Tank 88 from the San Fernando Valley, and Engine and Tank 41 from Hollywood rolled.

By now busy Sepulveda Blvd. was blocked as the fire burned eastward. A hundred police officers from West Los Angeles and Valley Stations were rushed to the area to try and control the snarled traffic and facilitate movement of fire apparatus.

Sepulveda is one of the few arteries by which the mountains may be crossed. Radio stations broadcast information that the road was closed and warned homeward bound aircraft workers to take other canyon roads. Word was also passed to students and faculty at the University of California at Los Angeles to take other routes.

The road was not reopened until 1 a.m. on the 29th.

Meanwhile the fire was burning east from Sepulveda toward Bel Air. Then a sudden shift in the wind spread the blaze on the west side of the highway.

Prompt action here managed to stop the slopover or a real disaster might have occurred—a wind-fanned fire in dry brush burning east and west toward some of the most expensive homes in California.

Meanwhile every available Mountain Patrolman, under command of Batt. Chief Henry Sawyer, responded to the blaze. Several patrolmen and Tank Patrol 1 were kept in reserve in the event another mountain fire should break out.

The signal office at Westlake was fast becoming a madhouse as dispatchers combed the city for every available tank wagon. Tanks were vital since there are no hydrants in the area.

On learning of the fire, Chief Keith E. Klinger of the Los Angeles County Fire Department offered any assistance needed.

Three county juvenile forestry crews and a bulldozer were dispatched to the blaze all under command of Asst. Chief Harvey Anderson, County Division III, one of the area's leading mountain fire fighting experts.

Liaison was made at once with Chief Moore and county fire fighters were quickly and efficiently worked into the fight against the stubborn blaze.

Shortly after 4 p.m., Chief Engineer John H. Alderson arrived and after a brief survey ordered eight booster tank wagons with four-firemen crews to the fire. One company, BT 53, was ordered in from San Pedro in the Harbor area—nearly 40 miles away.

Two city bulldozers and the county "cat" started building lines around the fire, which was burning in some really rugged terrain. But the "last stand" took place on Fire Road 19 between the fire and the Bel Air Homes. Although menaced by the heavy smoke and leaping flames, fire fighters stood their ground here.

Crews remained on the lines in cold trail and mop-up operations until noon on the 29th.

It was the second largest concentration of apparatus in recent L.A.F.D. history—the biggest coming last September on the Chatsworth Fire.

At the fire in Sepulveda Canyon were nine engine companies, eight tank trucks, nine booster tanks, two hose carriers, two utility trucks, 11 mountain patrol units, two mountain patrol captains, two battalion chiefs, one assistant chief, and Chief Alderson.

Among the unusual equipment on the fire were Tank Patrols 1 and 2, recently-purchased, all-wheel drive, 1000-gallon tanks; and Tank Wagon 39 from Van Nuys, a 2500-gallon mother tanker.

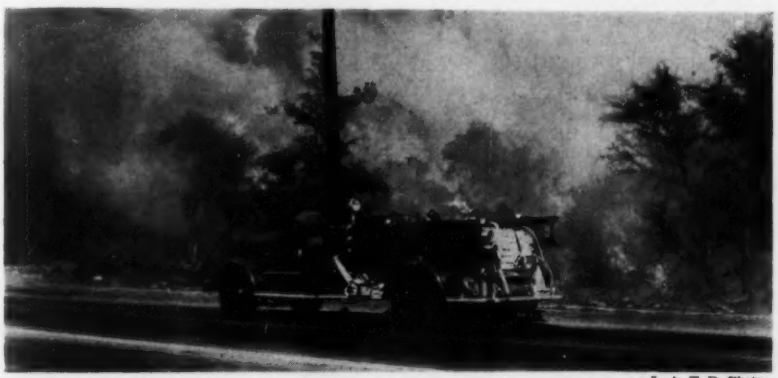
Emergency Truck 27 was ordered to the Mountain Patrol Headquarters to assist with broken-down apparatus.

Fourteen move-ups were necessary, with two companies, Engine 43 and Engine 6 and Booster Tank 6, moving twice.

But just about the time the weary city

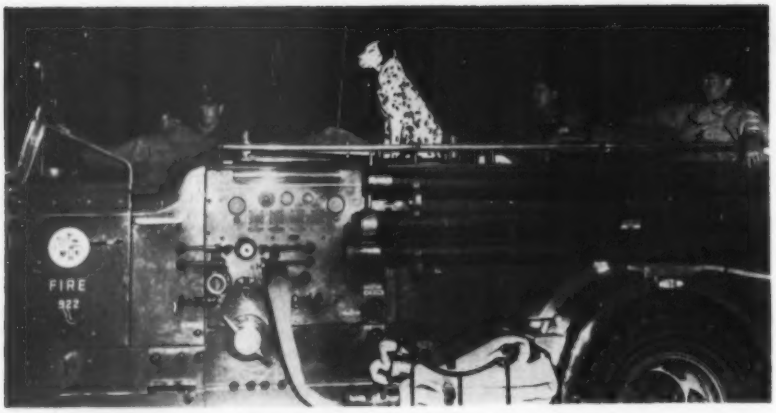
L. A. F. D. Photo

Smoke and flames boil up in background on Bel Air fire as bulldozer cuts firebreak.



L. A. F. D. Photo

L. A. F. D. Engine 41 on Sepulveda Boulevard near Bel Air. Note flames pouring from hillside behind. No homes were lost after firemen waged long battle to control biggest brush fire in city in many years.



Firemen from Engine 71, L. A. City Fire Department, relax while "Spot," company mascot looks on. Men were working on Bel Air fire off Sepulveda Boulevard.

firemen were cleaning their apparatus and last crews were being sent home, a fire broke out in the Davis Canyon section of Pasadena in county territory.

This blaze posed an even greater immediate potential than the Bel Air blaze. This fire was just west of the line where the disastrous Monrovia Peak Fire was finally stopped in January, 1954.

The fire threatened 75 homes in the Hastings Ranch subdivision of Coronet Homes. Homeowners watered down rooftops while crews from Pasadena, Los Angeles County, and the United States Forest Service rushed to fight the fire.

The fire was caused by a mysterious explosion among picknickers at Eaton Canyon County Park.

Miss Louise Lucken, park naturalist, said 175 children, members of Temple City and El Monte groups, and 20 leaders were evacuated by bus from the park after the explosion caused the fire to jump to dry undergrowth.

Sixty acres were burned before seven fire companies, 50 indians from a U.S. F.S. "hot-shot" crew, six tankers, two camp crews, and a tractor, under Asst. Chief William Weyant, Division II, L. A. County Fire Department, brought the fire under control.

Propane Truck Fire Blocks Highway for Hours

A runaway tractor-trailer truck, containing 4,300 gallons of propane, was deliberately ditched by the driver, Jerome Gilboy, of Passaic, N. J. The crash wrecked the tractor part of the combination, which was completely destroyed by fire resulting from ignition of gasoline in the tank of the truck-tractor. The heat from the burning gasoline raised the pressure inside the LP trailer and the safety valves opened, releasing gas, which immediately caught fire and burned with a spectacular blow torch type flame to a height of 75 ft. As the pressure was reduced, the safety valves would close and flames would die down. The action was repeated over and over for 3½ hours, or until the tanks were cooled to a point where LP gas pressure was below the safety margin.

The original alarm was answered by three trucks of the Port Jervis F.D., a pumper and a tanker from the Greenville Township F.D. and the pumper of the Mt. Hose Company. On the first response, no effort was made to extinguish the fire, due to possibility of explosion and shortage of water in the area. There was no serious exposures, although a section of forest was burned, the concrete of the roadway was crumbled away and a telephone cable was scorched. All the original trucks returned to quarters by noon leaving only N. Y. State Police at the scene.

A second alarm was sounded at 12:45 p.m. after Fire Chief Franklyn Gordon talked to the owner of the vehicle. Again, three trucks from the Port Jervis F. D., two from Greenville Township, one from Mt. Hose answered. A mutual aid call was sent out for Sparrowbush and Johnson F. D. to answer, as they have large booster tanks. The Conservation Dept. forest fire truck also answered the mutual aid alarm. Seven of the trucks set up a shuttle system from a pond two miles away and, using boosters and 1½"-lines, the fire was cooled to a point wher it extinguished itself. Some gas remained in the truck after the fire was out and a considerable amount was dissipated by using fog, as gas was valved off to further reduce the pressure. After considerable difficulty the fire-blackened trailer was finally hauled away at about 5:30 p.m. Firemen and trucks from Port Jervis, following the fire vehicle, were again called into action when the driver detected gas. A portable pump was hooked up to 1½"-line with ⅝" fog nozzle and was used to dissipate the fumes and further cool the tank. After this, the fire vehicle was escorted by Police fire apparatus through the City of Port Jervis. It was found that an employee of the transport company had left a valve open, when he was finished reducing pressure, which allowed fumes to escape from fire weakened piping. When this valve was closed, the tanks were found to be gas tight. At about 7 p.m. that night fire officials breathed a sigh of relief when the trailer, now empty, was dispatched back to New Jersey.

ROBERT R. WHEELER

N.S.R. Develops "Wet Water" Fire Extinguisher

In submarines, and interior spaces of surface vessels as well, the difficulties of fire fighting are aggravated by a lack of control over ventilation. For example, in a submarine during surface cruising, fresh air is drawn down across hatches to ventilate the ship and provide new supply for the engines. As a result, the large quantities of air, which pass through several compartments, produce strong currents of air in the vessel.

The problem of ventilation in a submarine necessitates fire fighting, if called for, under circumstances much different than fighting land fires where the first act is to clear away the products of combustion by providing proper ventilation. Stowage aboard the submarine, and the presence of almost limitless miles of wiring and piping, further complicate matters.

Satisfactory fire extinguishers for submarine use must not contribute any substantial amount of toxic materials, whether inherent in the extinguishing agent or a result of its breakdown at a fire. The extinguisher also must be able to quickly stop smoking and smoldering. It is also desired to obtain a single type of extinguisher that can be used on all kinds of combustibles, without regard to the presence of electrical equipment.

To meet the situation a portable first-aid fire extinguisher has been designed, developed and tested at the Navy Research Laboratories for use on most fires likely to be encountered in submarines.

The extinguisher uses water, improved by the addition of a wetting agent, as an extinguishant; compressed air, which is stored in the same compartment as

Tractor-trailer fire after volunteers had been in operation for fifteen minutes.

the water, supplies the operating force. To insure low electrical conductivity, and high fire extinguishing efficiency, the water is broken up by a special nozzle into a spray of optimum drop size. This form is slightly more effective than a solid stream and more effective than streams approaching a broad mist.

The addition of a 0.1 percent of concentrated wetting agent to the water reduces the amount of liquid required to extinguish the test fires by one-third without appreciably increasing electrical conductivity.

In the NRL tests, cotton waste was used as fuel in experiments with deep-seated fires, while a shallow pool of diesel oil, representing the flammable liquid tests, and a deep tub of vigorously boiling hydrogenated vegetable oil was used for the fat fire test.

The low electrical conductivity of the emitted spray was demonstrated by measuring the current flowing through it when directed against a copper plate charged with potentials up to 950 volts. At a distance greater than 4 inches, the current in all cases was less than 1 milliampere, which is below the minimum that can be felt.

Research, which is continuing, is being conducted by the Engineering Research Branch, Chemistry Division, under direction of Messers A. W. Bertschy, A. F. Armington, H. E. Moran and R. L. Tuve.

Novel Church Raise for Ladder

By A. L. RATHKE
Chief, Training Div.,
San Antonio, Tex. Fire Fighters' Academy

No attempt will be made to prepare a written procedure for a church or dome raise, where portable ladders of varying length are to be raised vertically in banks, churches, auditoriums, etc. It is assumed that all fire departments are thoroughly familiar with the details of such procedures. This method that is submitted herewith has been in use in our training school very successfully for some fifteen years.

Two ladders are used in this operation. After the ladder to be climbed is raised to a vertical position, a second ladder is placed upon the lower rung between the beams of the vertical ladder; this second ladder is moved in one or two rungs (see Fig. 1) and is placed in a horizontal position. Using a rolling hitch (or its equivalent), the two rungs of the two ladders are leashed very securely (Fig. 2). Here men are shown in position and holding the anchor ropes that are tied to the third rung below the ladder tip. Two or three men stand on the horizontal, or anchor, ladder. When everything is in proper order, it is almost impossible to force movement of the butt, even on tile, polished hardwood floors, etc. Should there be a shortage of manpower the anchor rope may be fastened to some substantial object and the anchor ladder may be weighted down with sand bags amounting in weight to 300 pounds or more.

It would be wise to use some protective measure beneath the ladder butt to prevent marring the floor, such as rubber matting, etc.

It is not claimed that this method has never been used anywhere else prior to its development here in the Training School. It is hoped that it may be of some value to someone in the fire service.

Figure 1

Arson Seminar Attended by 300 Fire Experts

Arson detection is every fireman's job, even down to the rawest rookie, Captain Ray L. Straeter, head of the Los Angeles Fire Department's arson bureau, told the fourth annual Arson and Fire Prevention Conference in New Orleans.

"The fire fighters are the first to arrive on the scene and, as far as the arson investigation is concerned, they are the detectors," Straeter told approximately 300 persons representing 13 states and the District of Columbia at the conference chaired by Sidney S. Bowman, Louisiana State Fire Marshal:

"If, in the fire fighter's opinion, the accidental element is absent, he should call for an arson investigator. If the investigator is not immediately available, firemen should photograph all evidence before it is removed. If a fireman is not alert, it is like trying to put together a jig saw puzzle with some of the pieces burned away. To throw away the candle found in a closet or to place a lot of combustibles in an incinerator is to destroy the evidence," Straeter said.

"Modern-day fire fighters are being thoroughly trained in arson detection," said Captain Straeter, "and even the rookie fireman knows he must do more than just put out the fire."

When Chief Bowman first conducted his conference a little more than three years ago, his purpose was to provide training in arson investigation and fire prevention for his own men. But it soon became apparent that the talent he arranged to address the conference was too good to be limited to so small a group. Accordingly he expanded his viewpoint to include everyone in Louisiana and the southern states interested in arson investigation and fire prevention as prospective delegates.

The Louisiana conference has become one of the most notable of its kind in the United States and does the much needed job of providing training in these fields to all interested persons in the southern states.

Another convention speaker was Fire Marshal George W. Clough of Nassau County, New York. He said certain things present at a fire definitely point to crime, while others indicate the fire is a result of natural causes.

"The greatest indication that a fire has been deliberately set is the presence, simultaneously, of two or more fires on the same premises. Other indications are closed doors and dresser drawers left open, the presence of delayed ignition devices, inflammable liquids, the absence of pets or pictures of loved ones, furniture covered with sheets or papers to help spread fire and the blocking of windows to prevent early detection of flames. This can be done by boarding up the windows or painting them black," said Fire Marshal Clough.

"Fire generally results from normal causes when all indications point to the fact that they were started from careless smoking or careless disposal of smok-

(*Continued on page* 900)

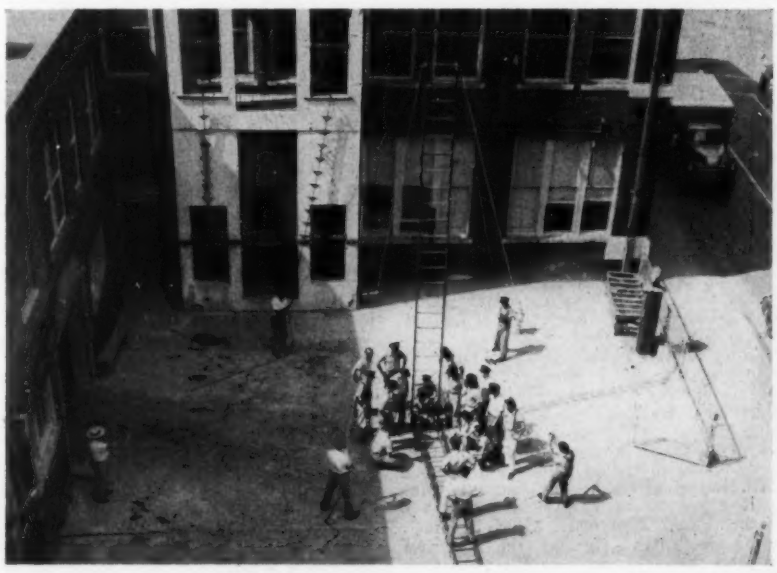


Figure 2

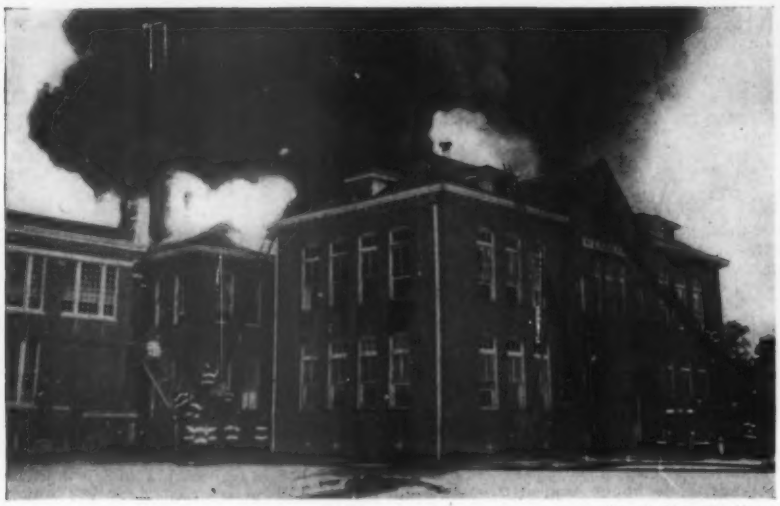


Photo by Linwood J. Martin

Dallas school fire shortly after fire fighters arrived.

Dallas Youths Admit Setting Costly School Fire

Six teen-age youths were taken into custody by police of Dallas, Tex., on April 23, after evidence showed three of them responsible for starting a fire two days before which damaged the William B. Travis School to the extent of $125,000.

A 15-year-old ringleader of the boys admitted he set the blaze but later implicated the others.

The youth, an eighth grade student and player on the baseball team, whose name was withheld, planned with others to burn the school because, he said, the library teacher did not want him to sit with the other boys, but wanted him to sit by himself.

He sneaked out of his home and met two pals about 10 blocks from the school. Here they took some safety flares from a construction job. At another point they gathered some newspapers and then met three other youths at the school. The latter had also been tipped off to the plan to burn the building.

The 15-year-old said he and another boy broke a window and that three of them went inside. Two went upstairs. They carried flare pots and poured some kerosene from them onto the floor and onto some books piled on the floor. They then ignited the books with matches.

Much the same routine was followed downstairs; then the trio left by way of the window through which they had entered. Outside the school, said the boy, he lighted another flare and threw it in through a window on another side of the building. The boys then separated and went to their homes.

The fire was discovered about 4:40 a.m. on the 21st, when residents of nearby houses were awakened by breaking glass. By the time firemen reached the scene, the fire had reached major proportions. Three additional alarms were turned in, in rapid succession, bringing 17 pieces of fire apparatus and a large complement of firemen to the scene, under Fire Chief C. N. Penn.

Flames spread through the first and second floors in parts of the two-story red brick building, built about 1890.

The "under control" signal was sounded at 5:11 a.m., but the blaze reportedly flared to major proportions again at 6:00 a.m., necessitating recalling all forces that had been sent to quarters, and calling out the off-shift fire fighters. The second upsurge of the blaze involved the attic spaces and second floor. Fire lapped out of the second floor windows, endangering firemen on ladders from which they were operating streams into the blazing interior.

Fire Investigator L. W. Moore, who got into the building during the "under control" period, said the fire was definitely arson. From then on the search for the culprits was accelerated.

During the fire, although intense heat was generated on the first and second floors, a refrigerator in the building basement safely guarded four large boxes of polio vaccine.

R. A. F. Personnel Get Fire Fighting Training

On Saturday, July 2, the first intake of 250 class 'H' Royal Air Force reservists reported for a fortnight emergency fire training at the new Centre which the Home Office established at Washington Hall between Wigan and Preston, Lancashire, England. There they found the Fire Service inspectorate and the Centre's energetic Commandant, Mr. Tom Knowles, had done everything to make their training interesting and their stay as comfortable as possible.

Living quarters at the Centre, which covers three acres, are single-storey concrete huts with central heating and adequate ablution facilities. Outside the huts look drab, but inside they are bright. Twenty men live in a hut with a R.A.F. sergeant acting as 'father'.

When the reservists arrived at Washington Hall they were directed to the reception centre near the main gate where they were detailed to 'wings' and squads for training purposes. They were medically examined and issued with kits and fire fighting gear.

Training included basic drills with emergency-type pumps and extension ladders, instruction in practical firemanship, water relaying and first aid. The reservists also saw demonstrations of turn-table ladders and other conventional fire fighting appliances.

There are nine 40-ft. drill towers, nine drill grounds (one of which is large enough for a complete intake of 500 men to parade), and nine static water tanks of 500 gallon capacity. A reservoir holding 300,000 gallons has been excavated and is linked to a ring main serving all the drill grounds and numerous hydrants on the site. This main is supplied by an automatic electric pump. There are also two natural ponds in the area.

Photo by Linwood J. Martin

Knocking down fire in school attic proved a smoky job for Dallas firemen.

The reservists have 30 emergency appliances of all types for training. They also have 7 lecture rooms in which to study the theoretical side.

To dry the large number of hoses likely to be used—2,000 a week or more—a plant of novel design is being installed. This is said to be capable of dealing with 60 lengths in 5 hours through the medium of warm air which is blown through and over the hoses laid horizontally in racks.

The staff at Washington Hall comprises, in addition to the Commandant and Chief instructor, 10 senior instructors, 52 instructors and a number of civilians. The secretary is Mr. F. C. Millward. The Royal Air Force camp staff is in charge of Squadron Leader Ravenscroft.

At Washington Hall emphasis is on practical training, but reservists will have a little bit of spit and polish. For example, each morning there will be a ceremonial flag hoisting parade.

Built during the war as a camp for American Service men, Washington Hall was later a teachers' training college. The Home Office took the place over last year under the Civil Defence (armed forces) Act, 1954.

Acknowledgment: The editor expresses his appreciation to Mr. G. F. D. Pratt, editor of our esteemed British contemporary, "Fire Protection Review," for the information on which this article is based.

Flames Damage Inglewood Store

Sparks from a compressor unit ignited paint thinner at the rear of an Inglewood, Calif., hardware store and touched off a blaze which caused an estimated $25,000 damage.

Four Inglewood fire companies were aided by four Los Angeles County Fire Department companies in fighting the blaze on April 23, at 936 W. Manchester Boulevard.

The damage estimate included $15,000 worth of stock and $10,000 damage to the building. —PAUL DITZEL.

Firemen Battle Maniac As Well As Fires

An axe-wielding war veteran stood off Buffalo, N. Y., firemen when they attempted to enter his burning home. The firemen protected themselves by directing a stream onto the maniac until a police bullet ended the siege and sent the berserk man to the hospital.

The fire fighters, under command of Battalion Chief John W. Block, found six separate fires burning in the two-story frame dwelling when they arrived. As they entered the structure, a man identified as Dennis Hefferman, 28, was standing on a stairway with flames at his back.

While other firemen put a ladder up to a second floor window, the firemen tried to get past Hefferman who menaced them with an axe. Junior Capt. John Glair of Truck 10 first approached Hefferman to get the axe from him but slipped and then had to retreat.

Hefferman also threatened police officers with the axe and a long pair of shears when they tried to calm him. As the berserk man swung the axe at a patrolman, the partner of the latter shot Hefferman in the calf of his leg and sent him rolling down the stairs.

The flames were first noticed by a neighbor, who sounded the alarm. When sirens of approaching apparatus were heard, the neighbors heard Hefferman shout, "Don't call the Fire Department. It's my house. Let it burn."

Detective Sergeants Fred A. Thomasula and Stanley J. Segit of the Arson Squad reported they found six separate fires, three in upstairs closets, one on a stairway and two in a downstairs clothes closet and in the living room. All appeared to be set.

Battalion Chief Block estimated damage to the building at $3000, and $2500 to the contents. Police records showed that officers were forced to break down a bathroom door of Hefferman's home several years ago to thwart a suicide attempt.

PAUL DITZEL

Guilty Phone Monopolist Freed

On October 1, last, a New York state law became effective requiring that a person using a party-line telephone surrender it immediately when another person breaks in and says he wants to call a physician or report an "emergency," such as a fire. If the emergency is a fraud through which the use of the telephone is usurped, the usurper is subject to prosecution under the same statute. It carries a maximum penalty of a year in jail, a fine of $500, or both.

The first case to be tried under this law was concluded May 24, last, when Dutchess County Judge John R. Schwartz set free Mrs. Mary L. Kayes, 43, housewife whose husband is caretaker at Camp Berich near Clinton Corners, N. Y.

Mrs. Kayes refused to yield the phone on January 21, last, during an incident that occurred in the town of Clinton, near Poughkeepsie. At 2:09 p.m. that date, she was talking to a friend in Rochester, N. Y., on a seven-party line. Three minutes later, Donald Townsend, a volunteer fireman and dispatcher, tried to report a grass fire a few miles down the road from the Kayes. The fire eventually burned down a barn. Townsend quoted Mrs. Kayes as saying "Let the damned thing burn." Townsend and Deputy Sheriff Charles Borchers brought Mrs. Kayes in for prosecution and, after many weeks of legal maneuvering, the case came to court, before a jury of men and women, which after deliberating some five hours, found her guilty.

After listening to statements made by the defense attorney and Dutchess County District Attorney Raymond C. Baratta in which leniency was recommended by both sides because Mrs. Kayes had a change of heart and surrendered the line eventually and attempted herself to pass along the alarm, the judge suspended sentence.

Judge Schwartz in suspending sentence, stated the woman's refusal to yield the line had been "hasty and brief." The value of such a law is evident, he said, but while he considered the jury's verdict (guilty) against Mrs. Kayes a proper one, he said no purpose would be served by subjecting her to punishment. He said he was convinced Mrs. Kayes would not repeat her offense, and discharged the $500 bail under which she had been at liberty.

Mrs. Kayes reportedly now has given up her party phone and has a private line. She admitted that her failure to hang up was "the wrong thing to do."

This case has received wide publicity throughout the nation; many newspapers editorialized on it. The New York *Herald-Tribune*, for example under date of May 30, 1955, said in an editorial—among other things—*"It is to be hoped that all such callers will take due note of the precedent established in the case of Mrs. Kayes. It's small wonder that the barn burned up while the conversation prolonged itself. Many a would-be telephone user has done the same thing."*

Latex Makes Smoky Fire

Portland, Oregon, fire fighters were forced to operate from the outside, in fighting a three-alarm fire in the Western Foam Latex Company, 1024 N. W. Flanders St., May 30th last.

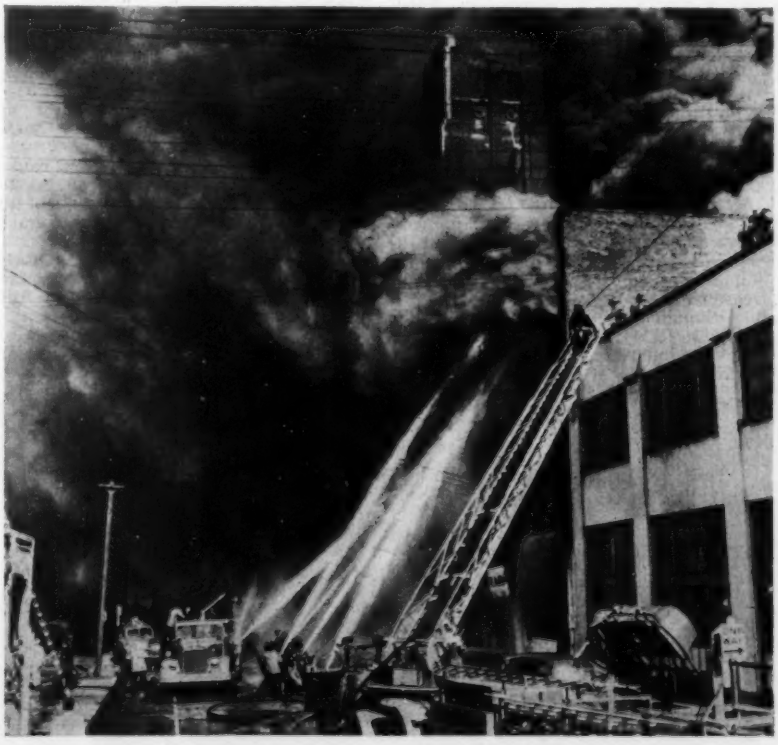
Smoke given off by foam rubber so charged the four-story brick building that firemen had to resort to heavy duty streams from ladders, deck pipes and portable monitors, to control the threatening blaze.

Edward Boatright, assistant chief of the Portland Fire Department, said his men operated from rooftops and neighboring buildings because of the heavy volume of smoke. Some smoke and water damage was done to adjoining buildings but fire fighters prevented their involvement by throwing up walls of water.

When firemen arrived, flames were shooting from the roof of the structure and smoke fogged a four-block area. The fire was first noticed by postal employes of the post office annex directly across the street from the latex company. First arriving fire fighters quickly shot in additional alarms, bringing a heavy complement of men and 24 pieces of equipment to the scene.

Chief Edward Grenfell, who commanded operations, said the smoky struggle was one of the worst of the year. Despite the handicaps under which they worked, no firemen were seriously injured. Four were shocked by electricity when they entered the building's front door and came in contact with a standpipe that had been charged by broken wires.

Cause of the fire has not been determined.



Smoky Portland blaze threatens exposures. Burning foam latex gave Portland fire fighters of 17 companies a short but stiff struggle to contain the threatening blaze. Heavy streams from street, roofs and ladders held fire to minimum loss.

Second Serious Blaze Threatens Port Jervis

Port Jervis, N. Y., which was the scene of a costly fire on May 12 last, was visited by a second disastrous blaze on June 15, when a former lumber yard now serving as a warehouse, erupted into flames which destroyed or damaged eight buildings.

The latest blaze originated in the 150 by 175 foot building used by the H. and M. Knitting Mill Outlet Store, at 57 Jersey avenue. The Outlet store occupied the front section with its office and display room as a factory outlet. In addition, the Techniflex Corporation, located at 55 Jersey avenue, occupied much of the storage space in the rear. Some space was occupied also by E. & K. Service Station located at 29 E. Main street.

Next to this building was a three-family apartment house, at 65-69 Jersey avenue, and a private dwelling, at 62 Jersey avenue. The three-family tenement and the dwelling were destroyed, as was the warehouse.

Damaged severely were a home at 71 Jersey avenue; the Port Jervis Bakery, 58 Jersey avenue; Stanley Drapala's electric repair shop, 64 Jersey avenue; the barber shop of Louis Fidler and restaurant of Frank Martino at 66 Jersey avenue; the Fidler and Martino apartments in the same building; and a home at 3 Seward avenue, more than a block away from the warehouse. Some slight additional damage was done to roofs and other property in the area by sparks carried on the wind.

The first alarm was sounded at 5:02 P.M. from Box 46, ironically enough while the city was still participating in the nationwide civil defense test. Earlier that afternoon the city was under an alert, and auxiliary police were still on the job.

All seven companies of the Port Jervis Fire Department responded promptly but the fire was out of control before arrival of the first unit. According to eye witnesses, the flames spread with explosive violence and the entire warehouse was aflame within seconds after the fire was first noticed.

The cause of the fire was not immediately determined but fire department officials reported an investigation was under way to attempt to ascertain the reason for the fast start.

Although at the time of the day the city's streets were feeling peak traffic, it was a fortunate time to secure plenty of fire fighters. It is estimated that over 250 volunteers were in action at the height of the blaze.

Firemen experienced difficulty in coming to close grips with the fire because of the flames and radiated heat. Several firemen were burned in the effort to bring water to bear on the flaming structure before they were forced to retreat from the front of the fire building.

As soon as the magnitude of the fire was seen an immediate call was put in to the County Mutual Aid Plan. Equipment and volunteers from three states and six communities responded to the call for assistance, sent out by Fire Chief Franklyn Gordon. The responding companies were: Sparrowbush, N. Y.; Greenville Township, N. Y., and Matamoras, Penn. These units were dispatched directly to the scene of the blaze and put into service. Units from Cuddebackville, N. Y., and Montague N. J., were stationed in local fire houses to cover unprotected areas.

The importance of such coverage was attested when Cuddebackville's truck was dispatched to a roof fire about two blocks from the main blaze. They made short work of this threat. Companies from Milford, Penn., and Westfall Township, Penn., also filled-in to cover the Matamoras area.

Radiated heat ignited buildings across the street from the warehouse and threatened a factory building of 150 by 175 feet. Fortunately this was constructed of hollow tile, brick and steel, and had wired-glass windows. The intense heat melted some of these windows but the building and contents were saved from serious loss.

Fire fighters were somewhat handicapped by the difficulty in attacking the fire from the rear because of the contiguous Erie Railroad tracks. The fire ignited a railroad platform made of blacktop, and some railroad ties. This extension fire was fought by Erie Railroad employees using hose and equipment brought by locomotive.

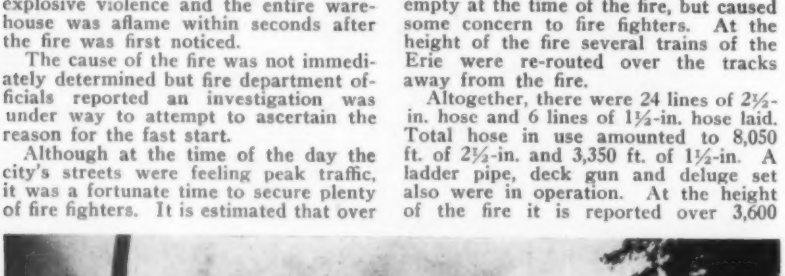
At the rear of the exposed factory are two 30,000-gal. gasoline tanks buried behind a concrete wall. They were empty at the time of the fire, but caused some concern to fire fighters. At the height of the fire several trains of the Erie were re-routed over the tracks away from the fire.

Altogether, there were 24 lines of 2½-in. hose and 6 lines of 1¼-in. hose laid. Total hose in use amounted to 8,050 ft. of 2½-in. and 3,350 ft. of 1¼-in. A ladder pipe, deck gun and deluge set also were in operation. At the height of the fire it is reported over 3,600 G. P. M. were being thrown either on the blaze or to protect exposures. A total of over 500,000 gallons of water was used. The fire force operated 10 pumpers, one aerial ladder and one rescue and salvage units.

At the peak of the struggle, one of the 750 pumpers of the Port Jervis Department had an unusual experience. The machine had been pumping at peak capacity through two 2½-in. lines to 1¼-in. nozzles for two hours when the street under the apparatus became ignited from the vehicle's exhaust. A hole 2-ft. wide by 3-in. deep was burned into the surface of the roadway, which had been oiled that day. The fire was extinguished by opening a drain valve.

The fire loss in the May 12 fire was about $160,000; the loss in the June 15 fire is estimated at $125,000. These losses exceed the total fire loss for the entire city for and including the period 1950 to 1954, during which period the figure stood at $123,135.

Acknowledgment: The editors express appreciation to correspondent Robert R. Wheeler, fire instructor, City of Port Jervis, for illustrations and data upon which this account is based.



Men and apparatus from three states and six communities aided Port Jervis's seven companies to stop fast spreading fire. Note hydrant near center of picture, that had to be abandoned.

Radiological Hazards

The International Association of Fire Chiefs, New York City, recently announced publication of its newly-revised study, "Radiation and Monitoring Fundamentals for the Fire Service."

When originally issued in 1952, this report was used by more than 20,000 fire departments in the United States and Canada and by many other organizations for the study of defense against atomic warfare. In revising the original text, the I.A.F.C. has brought the problem of radiological hazards into their proper perspective, particularly in view of the importance of radioactive fall-out as disclosed by recent H-bomb tests in the Pacific, where in one instance contamination covered a 7,000 square mile area.

Both the original and revised texts were written by I.A.F.C.'s Committee on Radiological Hazards in Fire Fighting under the chairmanship of Mathew M. Braidech, who is Research Director of the National Board of Fire Underwriters. The committee is made up of technically trained representatives from the fire services and civil defense organizations of both the United States and Canada.

According to Mr. Braidech, the increased hazard from extensive and delayed radioactive fall-out in large areas outside the target zone has been considered in a detailed manner and its importance in planning fire fighting activities has been carefully stressed.

Familiarity with the information which has been presented, together with its prudent application, will, he said, enable fire officers to protect their own personnel from the hazard of radioactivity and permit them to do their work without constantly checking with other monitoring units. Since the fire effects from atomic weapons constitute one of the most serious threats, early efforts in preventing the merging of a large number of scattered fires may forestall the formation of extensive mass fires and their accompanying death and destruction.

In addition, the new publication presents a review of elementary atomic

Crew members of the Kirtland AFB Fire Department standing in front of some of the equipment they operated to compile an enviable department record. The base department is staffed by approximately 150 airmen and civilian fire fighters, and they operate 19 pieces of crash and structural fire fighting equipment.

physics and discusses the general features of a nuclear explosion with particular emphasis on blast, heat and radiation effects. Instruments and methods for detecting and measuring radioactivity as well as decontamination techniques and protective safeguards against contamination are discussed.

A list of selected reading references is offered for those who wish to study the various topics in greater detail. The appendix contains a list of nuclear explosions which have occurred and a complete transcript of the "Report by the United States Atomic Energy Commission on the Effects of High-Yield Nuclear Explosions."

Mr. Braidech was assisted by William J. Scott, Fire Marshal of Toronto, Ont.; Carl F. Dreesen, Fire Protection and Crash Fire Equipment Engineer, Bureau of Aeronautics, Navy Department, Washington, D. C.; Kyle P. Laughlin, Specialist in Thermal Research and Weapons Effects, Federal Civil Defense Administration, Battle Creek, Mich.; Fred Shepperd, Editor of "Fire Engineering" and Chief Edward E. Wischer, Chief of the Milwaukee, Wis. Fire Department.

Kirtland Air Base Progresses

An intensive training program, coupled with a thorough fire prevention inspection system, are the two factors reportedly most responsible for the outstanding record of the Kirtland AF Base Fire Department in New Mexico.

Each of the 150 men assigned to the base fire department are required to spend at least 30 hours each month in classroom studies as part of the training program. In addition, at least once each week they take part in a "pit fire" training exercise using a salvaged airplane fuselage to gain practical fire-fighting experience. For practice in putting out structural fires, small buildings are constructed from scrap lumber and then ignited.

In the classroom work, the Kirtland fire fighters study such subjects as aircraft design, location of crew member positions, aircraft fuel capacities, technical operation of fire fighting equipment, equipment maintenance, first aid and fire prevention.

According to Sgt. Kenneth Bickel, NCOIC of the Training Section, the ultimate goal is to make all fire fighters familiar with every possible emergency or situation which could possibly arise in fighting either a structural or aircraft crash fire.

The men of the fire prevention section inspect every Kirtland building and area around each building at least once each 30 days. Areas which are more prone to contain fire hazards, due to the nature of the work done or material stored there, are inspected more frequently.

During these fire prevention inspection tours, the person in charge of the building must accompany the fire inspectors in order that he will be familiar with each potential fire hazard found in his area, and can take the necessary corrective action.

In addition to looking for fire hazards, the men of the fire prevention unit also maintain and service all of the hand fire extinguishers located at strategic points throughout the base. Each of these extinguishers is inspected and serviced at least once each thirty days.

Another function of the fire prevention section is to conduct an educational program for all of the base personnel. According to T/Sgt. William W. Geertz, NCOIC of this section, lectures and demonstrations covering the different types of fire hazards, corrective action required, different types of hand extinguishers and their uses, are presented frequently, to keep all the personnel aware of the dangers and causes of fires. Non-military groups also benefit from this educational program.

The effectiveness and success of this education program is reflected by the fact that there were only two serious structural fires in Kirtland during the past year—with the total damage to government property less than $1,000! In all, only 28 structural runs were made by the Kirtland fire department during the past year.

During the past year, the base fire department made 42 crash fire runs, in addition to the 28 classed as structural fire runs. Of these, there were only two crash fires classed as major. In addition, the department logged 717 alert runs during this period, standing by in case trouble developed aboard aircraft landing or taking off from this busy air base.

Chief Bradley, a veteran of nearly 25 years in the fire fighting business, heads an organization at Kirtland of 70 civilian and 82 airmen firemen. His Department has 19 pieces of fire fighting equipment, designed for both aircraft crash fires and structural fires.

Million-Dollar Fire Checked in Half an Hour

The warehouse and stockroom housing $1,000,000 worth of patterns at the A. O. Smith Corp. in East Los Angeles, Calif., were destroyed by fire early on August 10.

Ten companies from the Los Angeles County Fire Department under command of Asst. Chief Harvey W. Crutchfield and Batt. Chief George J. Reichert brought the costly fire under control after a half-hour battle.

A watchman at the 20-acre plant in the heart of the East L. A. industrial district spotted the fire and turned an alarm in at 6 a.m.

Because of the high industrial concentration in the district, normal response calls for five engines, one truck, a rescue, and a battalion chief.

When first-in Engine 22 arrived, the fire already had broken through the roof of the one-story corrugated structure. Heavy lines were laid and when Chief Reichert, Battalion 3, arrived shortly thereafter, he ordered a second alarm, bringing two more engines and Chief Crutchfield to the scene.

Fire fighters managed to stop the flames as they neared an adjacent building where the plant's solvents were stored. The fire also was kept from jumping to a nearby building housing a foundry and pattern shop.

Heavy appliances were brought into play at once. A monitor on Engine 127 was used from the northwest corner of the building, while the ladder pipe on the 85-foot aerial of Truck 27 was used from the southeast corner of the burning building.

It was touch and go for a few minutes, but the heavy concentration of men and equipment knocked the fire down before it could spread to other nearby structures or piles of lumber.

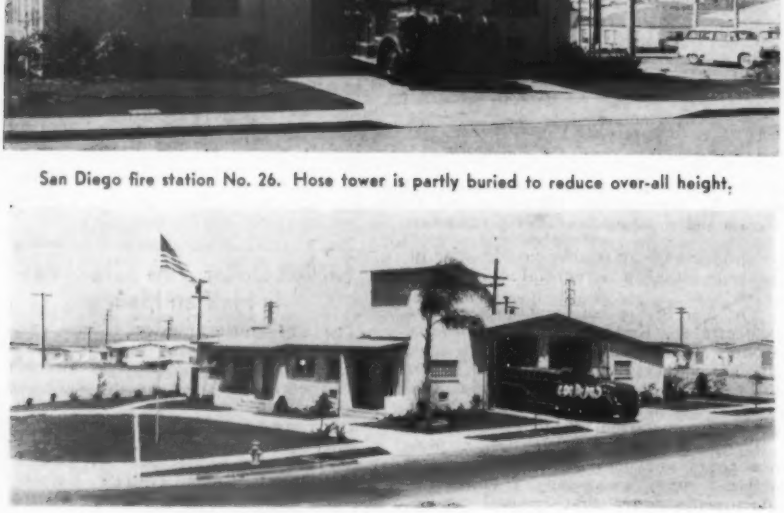
Willard France, general manager of the plant, said the loss would run "more than $1,000,000 in patterns and finished parts" for meters, hydraulic pumps, and service station gasoline pumps.

Plant officials praised the firemen for their fast work in containing the fire before it could spread.

The plant employs more than 800 people, many of whom will be laid off due to destruction of the patterns.

Flames from the fire were easily visible to traffic on the nearby Santa Ana Freeway, but no traffic jam resulted. —Cliff Dektar

San Diego fire station No. 26. Hose tower is partly buried to reduce over-all height.



San Diego dedicated its newest station on July 18.

San Diego Opens New Stations

San Diego's second newest fire station, located at 54th and Krenning Streets, was dedicated as Station No. 26, on March 10, 1955.

Dedication ceremonies, at which Fire Chief George E. Courser presided, were attended by civic dignitaries, residents of the neighborhood, and prominent representatives of the Pacific Fire Rating Bureau and local fire insurance groups.

The new station, architecturally designed to conform with other structures in the vicinity, has a low-level hose tower similar to those installed in all the City's newer fire stations. The tower is actually of standard height, but was held near roof level by constructing a portion of it below ground.

The station is located in a new housing development of considerable size and building density. The increased fire protection provided by its equipment and personnel has resulted in a substantial reduction in fire insurance rates for citizens living in this part of the city.

Station No. 24, the most recent addition to San Diego's fast growing number of modern fire stations, was officially placed in service July 18, 1955. Occupying 4300 square feet of floor area, and built at a cost of $58,000.00, the station is large enough to house two engine companies. It provides first-due protection for a combined residential and business occupancy district.

This latest station relocates and replaces the original Station No. 24, a Type V structure built during World War II to protect the city's largest government housing project that is presently being dismantled.

The structure is of cement block, Type I construction, and features a concrete beam and slab roof and a low level hose tower. Its low silhouette, obtained by partially constructing the hose tower below grade, enables it to satisfactorily conform to the architectural design of nearby structures.

Leading civic officials and heads of the various city departments directly responsible for the budgeting, designing, landscaping and furnishing the station were present at the dedication of this newest station. All were introduced by Fire Chief George E. Courser, who arranged and conducted dedication ceremonies. Vice-Mayor Clair W. Burgener, as principal speaker and councilman representing the district in which the station is located, clipped the red official dedication ribbon.

Snyder Volunteers Go 100 Per Cent for Radio

The Snyder Volunteer Fire Company recently laid claim to becoming New York State's first completely radio-equipped group. The new facilities consist of the installation of short wave radio receivers in the homes of the volunteer department's 70 men.

The $15,000 system will be used to notify fire fighters of the location of a fire when an alarm is received at the Amherst police station.

Chief Francis B. Ludwig said the greatest asset of the new radio system is that all firemen will know the location of any fire before the traditional warning siren atop the fire hall is sounded.

"Whenever that siren blows, hundreds of curious people begin tying up our telephone lines, asking the location of the fire. Then they follow the trucks and usually hamper our work," said Chief Ludwig. The radios will eliminate much of the traffic problem of sightseers at the scenes of fires.

Chief Ludwig said the receivers in the homes of his men will greatly increase the company's efficiency and give added fire protection to the district's 5000 homes. The district consists of $33 millions worth of assessed valuation.

"I think it's the greatest single step forward we've taken since we installed two-way radios in all our apparatus," the chief said.

The fire siren will continue to be sounded during the day, said Chief Ludwig, but will not be used at night.

"We are always short of men during the day when most of our members are working, so we'll continue to use the siren to alert anyone who may be in the vicinity but may not be home to hear the radio alarm," he explained.

Innovations are not unique to the Snyder department. Officials of the company, teaming with fellow firemen in neighboring Eggertsville and Williamsville, established a mutual aid fire system nearly 25 years ago, long before the present Erie County-wide program was set up. Snyder also was the county's first company to install two-way radios in all trucks.

Chief Ludwig said the most important part of a volunteer company's setup is not the equipment but the men who operate it.

"Most other companies allow social members to join," he said. "These fellows don't fight fires but just join to take advantage of occasional company social functions. We don't allow this. Every member has to participate in a certain percentage of drills, respond to fires and be on all-night duty at the fire hall occasionally or else he is dismissed."

PAUL DITZEL

Safe Handling and Use of Methylamines

The Manufacturing Chemists' Association, Inc., 1625 Eye Street, N.W., Washington 6, D. C., has issued "Chemical Safety Data Sheet SD-57—Properties and Essential Information for Safe Handling and Use of Methylamines."

The 20-page folder, part of a continuing series, details the precautions necessary for handling anhydrous methylamines and aqueous methylamine solutions, which are classified by the Inter-State Commerce Commission as flammable compressed gases and flammable liquids, respectively.

According to the MCA, these chemicals are not a serious industrial hazard, provided workers are effectively instructed and adequately supervised in their proper handling.

The publication contains data on the trade names; properties, grades and strengths; shipping containers, label and identifications; disposal and return precautions; unloading and emptying; health and fire hazards; storage hazards; handling; health, fire and explosion hazards data on spills and leaks; employe education and training; personal protective equipment; engineering controls; static electricity; ventilation; and cleaning and repairing tanks. Also waste disposal and miscellaneous health hazard information, including first aid, suggested medical treatment, etc.

The publication may be had from the MCA at a price of 25 cents.

"Mr. No-Run" Leads the Way to Greater Fire Prevention

At a meeting of the officers of the Ellinwood, Kans., Fire Department early in March of this year, the fact was noted that there had not been a city run of the department since December 4, 1954.

This appeared to be some sort of a record. And forthwith, several of the vamps began to think of ways and means to capitalize on it. The first step was a consultation betwen Fire Chief Homer F. Eberhart and Assistant Chief Robert Dick with James B. Crankshaw, Secretary-Manager of the local Chamber of Commerce (it should be emphasized that Ellinwood, although of but 3,000 pop., has a full-fledged C. of C.).

Out of this meeting came plans for promotion to make citizens of the community fire conscious; to keep them aware of an active fire prevention campaign, and to establish what might be termed a "mascot" for the fire department that would keep the program constantly before the public, something that was highly essential with the coming of windy, dry weather.

A cartoon-style "mascot" was dreamed-up and built to catch the eye and hold the interest of the local people and visiting guests and keep them posted on daily progress. This mascot, or symbol, was mounted on the front of the Chamber of Commerce Building where it overlooked Ellinwood's main business district.

The feature of the "spectacular" was the fact that the numbers on the symbol's helmet were changed daily.

To further spur interest in the drive, a contest was conducted among all grade school children in the Ellinwood area for a most popular name for the symbol. What was wanted was a name that would depict the good record of the community in and emphasize fire prevention.

Over 200 different names were submitted from the four schools in the area and after some deliberation the firemen voted on the name "Mr. No-Run." This became in effect, the "trade-mark" and "by-word" of the campaign and was quickly accepted by the citizens, largely as a result of promotion by the local press. As the days passed, the newspaper coverage spread the influence of the idea on an ever-widening scale until "Mr. No-Run" began to attract national recognition.

"Mascot" used by fire fighters to remind the public—and themselves—that nobody wants a fire! The numbers on the helmet and badge were changed daily.

With "Mr. No-Run" the focal point of the drive, many interesting collateral events took place to carry forward the effort. The day-by-day enthusiasm was very gratifying locally. The subject became the topic of conversation at coffee-breaks, P.T.A. meetings and get-togethers. When the fire whistle did blow (on five occasions during this period for two fires outside of Ellinwood's township district, and three fires in the township outside of the city) a large crowd would gather to see if Mr. No-Run's hat numbers would be changed. In short it might be said that "Mr. No-Run's number was up—constantly."

On Sunday, May 15, at 12:10 P.M., the fire alarm blew again and this time Mr. No-Run's record of 161 "fireless days" was ended but, as it proved, only temporarily. Everybody was thankful the fire was only a minor one—in fact a total property damage of only $40. Of added balm was the fact that the owner of the premises, with the aid of neighbors, had managed to extinguish the incipient fire before the fire department arrived and had actually called the Fire Station in an effort to cancel the response of the fire forces and thus preserve the record.

Ellinwood folks failed to let this episode dampen their efforts at fire prevention. They immediately set out to break their previous record. And as this is written, that record stands at 41 fireless days.

It should be added that the Ellinwood Fire Department serves in a dual capacity, with two pieces of fire apparatus, one for use in the city and one to cover the Ellinwood Fire District, which includes Lakin and Comanche Townships.

The records of both the district and the city's areas are reported growing with the city's record at 41 and the district's at 69 fireless days. There's talk of competitive fire prevention effort between areas on a stronger scale, with Mr. No-Run the sparkplug. But some of the forethoughtful folk point out that there may be some hazard in such competition because it may result in the effort of citizens to put out their own fires, and result thereby in costly delays in notifying the department.

At any rate, as of here and now, Mr. No-Run is the "leading citizen" of Ellinwood. And the good people say he's here to stay!

F. D. Applicants Get Agility Test

Ninety applicants for positions as Los Angeles County firemen have been given a new-type agility test at the department's recently-completed training center in East Los Angeles.

The tests were jointly supervised by members of the Fire Department and the Civil Service Commission.

All applicants previously had passed a written examination.

L. A. County F. D. Photo by Landrum

Up, over, and down. Applicants for positions as Los Angeles County firemen take physical agility test at County's recently-completed training center adjacent to East Los Angeles Headquarters. Men climbed 85-foot aerial on Truck 27 and came down fire escape to see how they would react to heights. Man on short ladder at right of tower is carrying 65-pound 1½-inch hose bundle.

Truck 27 extended its 85-foot aerial and applicants had to climb to the top of the five-story drill tower and then down the fire escape.

Then they had to carry a 65-pound 1½-in. hose bundle up two flights.

"These tests will enable us to obtain better qualified recruits and will result in fewer rejections during our training period," said County Fire Chief Keith E. Klinger.

Athough the new training center has not been officially dedicated, Chief Klinger said the urgent need for 100 additional firemen will demand immediate commencement of training.

The center will be dedicated to the late County Fire Chief Cecil R. Gehr who was killed while responding to a fire two years ago.

CLIFF DEKTAR

Code of Siren Ethics

A midwest public relations concern has been engaged by one of the nation's largest makers of electric sirens to initiate a long-range promotion that will help overcome the misconception held by some municipal authorities on the purpose and use of sirens on emergency vehicles. At the same time, the program would be designed to educate the public to a better appreciation of sirens and to encourage pedestrians and motorists to respect the use of such warning devices.

A feature of the program would be a proposed code of ethics on the use of sirens which, the proponents hope, would eventually be adopted by the International Association of Fire Chiefs and other national organizations of fire fighters.

Overflowing Tank Truck Causes Fatal Fire

Four persons were burned, one fatally, and two cars were destroyed in an unusual fire at one of the service areas on the New Jersey Turnpike. The tragedy occurred shortly after 1 p.m. on May 28th at the service area on the eastbound lane of the turnpike in the Township of East Brunswick.

A tank truck was delivering gasoline to a 10,000-gallon underground storage tank when the tank overflowed and gasoline flowed onto the roadway and beneath two parked automobiles. One car was unoccupied while Irving Blum, 34, his wife Myra and their two-year-old daughter, of Drexel Hill, Pennsylvania, were sitting in the other. Believed ignited by a nearby construction torch, the entire gasoline-covered area and the two cars were suddenly enveloped in flame. Two of the service attendants risked their lives by rushing into the flames and pulling all three of the trapped victims from the fire.

Fire apparatus, ambulances and rescue squads from nearby Milltown and South River raced to the scene in response to a call for assistance. The three members of the Blum family, along with one of the attendants who suffered burned hands, were rushed to the Middlesex General Hospital in New Brunswick where Mr. Blum passed away on June 5th as the result of his burns. Mrs. Blum and her daughter were reported in fair condition, and the attendant was released after treatment.

A 2½-inch line was laid from a hydrant in the service area and, together with booster lines, the firemen were able to bring the fire under control soon after arrival. A slight wind was blowing at the time, but was from a direction such as to blow the heat and smoke away from the nearby gasoline pumps and the service area building. A small amount of foam liquid was used during fire fighting operations.

WILLIAM C. PECK

Photo by William C. Peck

Two cars burning at East Brunswick Service Area, New Jersey Turnpike, just prior to the arrival of the fire department. Three occupants of car on left have already been rescued.

Half-Million Loss at Lumberyard Fire

Fire swept through nearly two-thirds of the 17-acre Wethersfield Lumber Company at Wethersfield, Conn., on May 20, in a general alarm fire that did damage estimated by fire officials at $500,000.

The general alarm brought fire fighting apparatus from Hartford and five other communities to cope with the lumber-fed flames, which at times leaped more than 100 feet into the air. The fire raged out of control for two hours as it swept through three buildings and 20-foot stacks of new lumber. It was the worst fire in Wethersfield's history.

The fire was discovered, near the hopper room of a building housing milling machinery, at 6:40 p.m., by John Redmond, a watchman, who turned in a call for fire apparatus. The leaping flames and vast volume of smoke in the early evening sky drew a crowd estimated at the peak of the blaze at 10,000.

Power lines near the property parted as they were licked by the leaping flames. Connecticut Power Company high tension lines were downed along with lines of the Hartford Electric Light Company.

The building in which the fire started was in the southeast corner of the 17-acre yard. The blaze was carried through the yard by a southwest wind as fire fighters worked to cut a firebreak in the stacks of lumber. At 9 p.m., when fire officials declared the fire under control, the mill building where the fire started was gone, and so were the two one-and-one-half story main sheds with their entire stock of dried lumber.

The general alarm was sounded shortly after 6:55 p.m. Additional help came from Rocky Hill, Hartford, Windsor, Windsor Locks, Cheshire and Poquonock.

TOM MAGNER

Another Party Line 'Hog'

Running parallel to the case of Mrs. Mary L. Kayes, 43-year-old housewife of Dutchess County, N. Y., who was convicted of hogging a party phone line and thereby delaying transmittal of a fire alarm, is that of an unidentified woman in Springbrook Township, Pa., who refused to free a telephone to permit a fire to be reported.

This happened in May, about the time the Dutchess County offender was being convicted by a jury.

Fire Chief Carl Hagen of Springbrook Township, close by Scranton, said the woman refused to hang up when a truck owner tried to telephone an alarm after his truck caught fire on a remote road. Her refusal delayed the alarm 15 or 20 minutes, the chief said.

The truck owner, Stephen Yuhas, of Duryea, was visiting friends in a remote section of the township when the truck caught fire. Yuhas ran a quarter of a mile to the home of George Aston and asked him to call firemen.

Mr. Aston told Chief Hagen that he lifted his telephone and found the line in use. He asked the woman to hang up so he could report a fire but the woman told him she was talking long distance to Washington, D.C., and refused to get off the line, Hagen said.

Chief Hagen said he would press any charges possible against the woman when her identity is learned.

Juvenile Fire-Setter Caught

Following over a week of round-the-clock investigation, Patchogue, L. I., police, aided by the Patchogue Fire Department, nabbed a 17-year-old youth who admitted setting a series of barn fires and a blaze in an old house in that community.

The boy who set the fires because "he liked to watch them and the excitement," ran away from home in May before a scheduled court appearance that month on a violation of parole charge. During that time, police said, he set two barn fires, broke into local establishments for food, stole three rowboats, and slept out. The blazes followed about the same pattern, beginning at the rear of the structure. Each got a good start before being discovered.

The worst of the fires destroyed a large barn in the rear of the Albert C. Snyder home, Patchogue, with contents, including two cars, antiques, tools, etc. One fireman was overcome and required treatment.

Another barn was destroyed only a few days before that and, in March, another barn was ignited, but that fire was extinguished before the blaze consumed the structure.

While police were following up leads in the effort to catch up with the firebug, Fire Chief Arthur Mapes toured the village at night to cover likely targets of the arsonist. "These fires," the chief said, "followed the same pattern. He picked on old barns."

Thanks. ROBERT E. SNOW

Firemen of the Greater Hartford area are shown fighting the general alarm fire at the Wethersfield Lumber Company, Wethersfield, Conn., on May 20. The fire, which caused damage estimated at $500,000, raged out of control for two hours.

Fireman rush to aid fallen Fire Chief Don Cowan after a tumble from a ladder while fiighting a fire in Tieton, Washington. Cowan is chief of the Naches Fire Department.

Chief D. Cowan Injured by Fall From Ladder

Don Cowan, 31-year-old Chief of the Naches, Wash., Fire Department suffered possible spinal and pelvic injuries on July 7 when he fell from a ladder at the height of a fire which swept through the Shearer Warehouse in Tieton, Wash. Cowan was operating a line from his own pumper when the back pressure apparently caused him to slip and fall 20 feet to the ground. He was taken to a hospital in Yakima in the newly-purchased Gleed first aid car. His condition is reported satisfactory.

Tieton Fire Chief Ralph Brooks stated that the fire started on the rear loading platform about 11:15 P.M., just following a meeting of the Tieton volunteers a half block away. Firemen from Tieton, Cowiche, Naches and Naches Heights fought the quarter million dollar fire for six-and-one-half hours in the face of winds up to 20 miles per hour which carried it through the 140 by 120-foot frame structure.

Contents of the building included 10,000 empty apple boxes which added to the intensity of the fire. Firemen added that sawdust used for insulation between the walls added to their difficulty in controlling the blaze.

Connecticut Firemen Meet

Robert S. Probst, of West Hartford, Conn., was elected President of the Connecticut State Firemen's Association at the 72nd annual convention which took place in Bethel, Conn., on August 12. A total of 363 delegates and 122 guests attended the convention.

Other officers chosen were Patrick M. Sherwin, of Bridgeport, vice-president; Charles H. Brundage, of New Haven, Treasurer; John Moehring, Secretary, and the Rev. Michael J. Thompson, of Niantic, Chaplain.

County vice-presidents named were Edward Duffy, Greens Farms, Fairfield; Thurston Howard, Hartford, Hartford; J. Franklin Dunn, Middletown, Middlesex; John H. Tweed, Branford, New Haven; Richard Galinat, Coventry, Tolland; Albert Martin, Willimantic, Windham, and William Canty of Torrington, Litchfield.

The delegates heard an address by William Kriby, fire coordinator for the State Civil Defense. The convention went on record as commending state officials and members of the State Legislature for their assistance in passing legislation beneficial to firemen throughout Connecticut. The site for the 1956 state convention will be chosen at a subsequent meeting of the Executive Committee.

—Tom Magner

Firemen Active in C.D. "Operation Greenwich"

Fire defense played the stellar role in the 4-hour "Operation Greenwich" staged by 2,000 C.D. volunteers and municipal forces April 30 last. Witnessed by high-ranking state and national military, civic and C.D. leaders, the exercise simulated a bomb attack on the Connecticut town which "killed" 50, "seriously injured" 500, set many "fires." Firemen from Bankesville, Round Hill, Glenville and Sound Beach stations, as well as central Greenwich Fire Headquarters fought the simulated "conflagration". Part of force is shown attempting to stop "fire" in Town Hall Annex. Paid and volunteer firemen were included in the "mass feeding" of 500 "refugees." Greenwich Fire Chief Stuart Potter directed the fire fighters.

Chicago Plans Improvements

"Chicago has a good fire department but it can be made better," was the opinion voiced by senior fire fighting officials of the Fire Department.

Anthony J. Mullaney, newly appointed Fire Commissioner, has high hopes for accomplishing that objective. Two main improvements are reported needed: first, modern equipment to replace certain special apparatus, that "is so ancient and decrepit that it could be classified as "junk", and second, a new, adequate training school for its fire fighters.

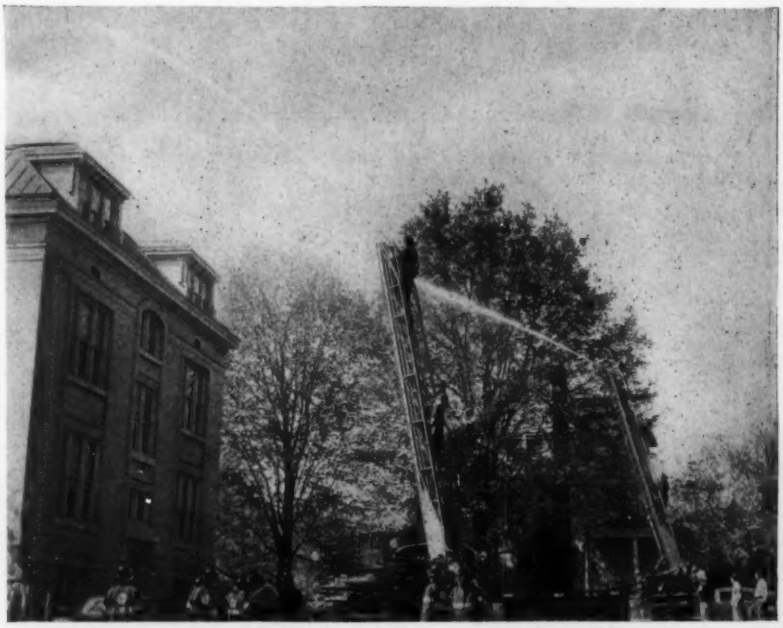
Commissioner Mullaney hopes for not only the new school, but also a "fire college", offering advanced courses for officers, preferably established on the campus of the Illinois Institute of Technology.

"The Institute now offers the only four year college course in the nation in fire protection and safety engineering," he said. "If we could operate our school in conjunction with that division of the Institute, we would have the best training program in the country."

Prof. John J. Ahern, director of the Institute's fire protection and safety engineering division, has expressed interest in such a program.

Chicago is said to be well off in pumpers, ladder trucks and other "prime movers" of fire fighting facilities, but it is the special apparatus, not often used, but desperately important when it is needed, that is worn out.

The "junk" classification reportedly applies to all three of the department's light wagons, four of the five high pressure vehicles, all three of the water towers, the one air compressor unit, and the single smoke ejector.



Greenwich, Conn., firemen stage fire fighting exhibition on the Town Hall in connection with civil defense demonstration.

Toronto Opens New Station

On Friday, March 4, 1955, Fire Chief Joseph Waterman was host at the opening of a new and modern fire station to serve the City of Toronto in the Dundas-Parliament Street areas. This new station replaces one which was built in 1876 and which is being demolished.

The cost of the new station was approximately $200,000 and was constructed to accommodate three pieces of fire-fighting apparatus. At the present time there is a new 100-foot all steel aerial ladder, and a new 840 gallon pumper stationed therein.

All the furnishings in this hall are modern and new. The bedrooms, sitting rooms and kitchen are all decorated in two different shades of pastel colors. The apparatus walls are tiled from the floor to the ceiling, and the hose drying room, which is at the rear of the apparatus floor, has hose drying racks to accommodate twenty fifty-foot lengths of hose.

Toronto F.D. Photo

New Toronto fire station at Dundas Street E., and Parliament.

Toronto F.D. Photo

Alarm and P. A. equipment in "floor watch" room of new Toronto station.

Toronto F.D. Photo

Corner of kitchen in Toronto's new station.

The modern kitchen is equipped with an electric stove and refrigerator, tubular steel arborite topped table and straight back tubular steel chairs upholstered in red leather, and there is ample cupboard space. The sitting room and alarm room are furnished with tubular arm chairs upholstered in red leather, and the large locker room has individual steel lockers for each man.

Another modern feature of this new hall are the night lights in the upper halls and apparatus room, which are built in the wall about twenty-four inches above the floor level. All the floors throughout are colorfully tiled in shades to complement the wall colors.

His Worship, the Mayor, Nathan Phillips, officiated at the opening of the new hall and guests included members of the Board of Control, Councilmen, Heads of various Civic Departments and other distinguished guests, including George Haering, Consul General for the United States, who is also an Honorary Fire Chief of the Toronto Fire Department and an active Honorary member of Box 12 Association; John Chisholm, Chief Constable of the City of Toronto; W. J. Scott, O.B.E., Ontario Fire Marshal, and J. W. Arnott, President of Box 12 Association.

The apparatus room and sitting room were tastefully decorated in palms, plants and flowers, compliments of the Commissioner of Parks, Mr. George Bell.

After the official opening, a tour of inspection was made by the Mayor and visiting guests, and a demonstration of the new aerial ladder and pumper was conducted.

It is anticipated that work will commence this summer on the construction of another new hall to replace an old station in the Keele Street area. This new hall will be constructed similar to the architecture of the new No. 7 Hall.

L. A. Fire Commission Hits Incinerator Ban

The Los Angeles Fire Commission has voted its opposition to a proposal which would eliminate back yard incinerators as a means of reducing the city's severe smog problem.

Commissioner W. H. Lollier, who introduced the resolution of protest during a weekly meeting of the group, said elimination of the private incinerator would, "greatly increase fire hazards."

The proposal has been made by some groups studying the smog problem that a city-wide rubbish collection service be started in place of the back yard incinerators.

Pickup of combustible rubbish in place of incinerator use, said Commissioner Lollier, if on a one or two-week schedule, would result in the accumulation of inflammable material that would ruin Los Angeles' excellent fire prevention record.

In many cases, the householder would transfer his fire hazard to a vacant lot because he would be "appalled" by his mounting collection of rubbish.

The Fire Commission also would require that trash containers be of metal, thus posing a "monumental" enforcement problem, said Commissioner Lollier.

The Los Angeles County Board of Supervisors has already proposed a ban on incinerators.

PAUL DITZEL

The WATCH DESK

Overhauling the firemanic news of the day

by ROI B. WOOLLEY

Volunteer Fireman Loses Leg

In Pottersville, R. I., Nathan Brown, 33, a volunteer fire fighter and father of three children, lost his left leg July 25th, last, and may lose the other as a result of a freak accident at the Pottersville Fire Station.

Brown and other volunteers were blasting for a well in the rear of the fire station. They were using dynamite to break through a ledge.

The men set eight sticks of dynamite. They said they heard seven go off, waited awhile and then decided that two sticks had fired together.

Brown went down to place five more sticks of dynamite, when the explosion occurred. His left leg was blown off and his right leg badly shattered.

Fellow-firemen raised the injured man from the well with ropes and sped him to Roger Williams General Providence Hospital. He was conscious throughout the ordeal.

* * *

Freak Fire Badly Burns Motorist—Heat Blamed

The hot weather that plagued the Atlantic seacoast in June, indirectly caused a freak accident and fire that badly burned a motorist on the depressed highway approach to the New York, New Jersey Holland Tunnel.

The accident happened at noon June 28, last, when propane gas, spilled from a tank truck which was moving alongside the car of Donald Oakley, Brooklyn, N. Y., became ignited from a roadside flare. The flames quickly enveloped Oakley's vehicle and he received serious burns on the face, arms and back.

Police said that the unseasonably hot weather apparently caused the liquid gas to build up pressure in the tank. This forced open a relief valve and caused the propane to spill onto the roadway.

The truck driver was uninjured, but New York-bound traffic for the tunnel was tied up for an hour while firemen fought the blaze.

* * *

Vamps Respond to "Stork Alarm"

In Berlin, N. J., on July 31 last, Elmer Miller was driving his wife Glendora to a hospital when she told him to "step on it." It was one of those occasions.

Miller stopped at the firehouse because he knew there was an ambulance there. But the place was dark. It was 1:50 A.M., and time was precious.

Mr. Miller bethought himself of the way to get the vamps—and perchance the ambulance. So he sounded the siren.

It worked. The volunteers came running from all directions. The father-to-be told them what was happening and the vamps ran across the street to the home of Dr. Daniel Santore. There wasn't time for any ambulance.

Dr. Santore got to the parked car just in time. Mrs. Miller gave birth to a boy.

* * *

Siren Sounder Soaked!

While we're on the subject of sirens, we take up the case of another siren sounder, one William Hohfeld of Norristown, Pa., who not long ago pleaded guilty to touching off the air raid siren at Schwenksville Fire House, on a Sunday morning.

Haled before a Justice of the Peace, the Schwenksville Chief of Police testified the siren was sounded at 3:20 A.M. (as a lot of the vamps could also testify).

Hohfeld voluntarily reported to the police chief and fire officials when he read an account of the incident, which said police were seeking the siren sounder. He didn't say what prompted him to send the alarm, but he was with four other men who—fortunately for them were outside the fire house when the alarm went off.

Although authorities could have prosecuted Hohfeld under the State criminal code and handed him a stiff fine, they brought charges only under the local borough ordinance, because the offender had voluntarily reported the incident.

* * *

All in the Name of Science

The march of time, and science, has hit the town of Hammonton, N. J., a bit below the belt. At least so the local vamps believe.

It all came about when the telephone company announced that the "Hello Girl" would say "Good-bye" in the Fall. With her passing, Hammonton's fire fighters may lose their 50-year-old fire alarm setup.

Right now, when Hammonton has a fire, the telephone operator sets off two sirens. Then she calls the fire chief's home, telling him where the blaze is. The chief pulls a switch setting off more bells in the homes of the town's 50 volunteers.

Now the telephone company has announced the local system will go dial, come autumn. There won't be any operator and, therefore, no fire alarm system.

The good burghers of Hammonton, prompted by the loud cries emanating from the vamps, have appealed to the N. J. Public Service Commission to save the operator and their fire alarm system from the march of science.

* * *

Vamps Stage Real Hot Show

These are the days of parades, tournaments, musters and daring-do exhibitions of fire fighting might, amongst the vamps.

Things got off to a flash start in Suffolk County, Long Island, late in May when some 65 fire departments of that county set out to stage a fire fighting demonstration on Route 25.

The grand finale was built around the burning of an old dwelling. This demonstration capped the ambitious program of the volunteers—and for it some 3000 of the local gentry (not to speak of the 1000 or more vamps) were right on hand.

The only hitch in the operations came when five of the attacking force suffered burns of the hands and face. Three of the victims were members of the Wyandanch Fire Department, and the other two hailed from far-away Mastic, Conn., and Ridgewood, N. J.

None of the injuries was sufficiently serious to interfere with the joyfulness of the occasion.

* * *

Expires in Blaze of Glory?

Out Inglewood, California-way, two firemen were injured May 18th last, when a 31-year-old veteran fire engine, used for standby reserve service, burst into flames in the fire station while the men were working on it.

Damage to the station and equipment was estimated at $7,000 to $10,000.

Anonymous

* * *

Two State Alarm—For a Dump Fire!

This 'un ought to set some sort of a record—a dump fire that got a two-state alarm.

The Ripley-esque was recorded in Port Jervis, N. Y., and Matamoras, one night not s'long ago.

Port Jervis firemen recorded an alarm

(*Continued on page 923*)

Indulges His Pet Hobby

George Warren of Forestville, Conn., erstwhile contributor to FIRE ENGINEERING, buff, vamp fire fighter and fire service antiquarian and historian, goes a bit further than most of his ilk. He can indulge his hobby by owning his own fire engine.

In 1953, contributor Warren purchased this 1918 Maxim Model 6T6 from the City of New Britain, Conn., where it formerly ran as Engine 2. In October, 1953, he used the rig to advertise the "Fireman's Ball" in Bristol. Since then he's kept it polished up and ready.

A member of the International Association of Fire Chiefs, the N.F.P.A., and other groups, Brother Williams possesses a collection of over 1300 fire photos.

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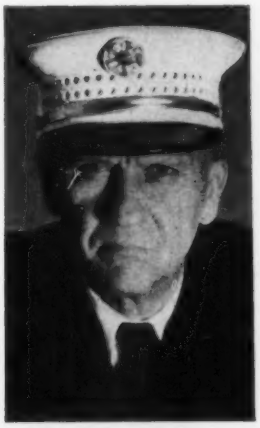

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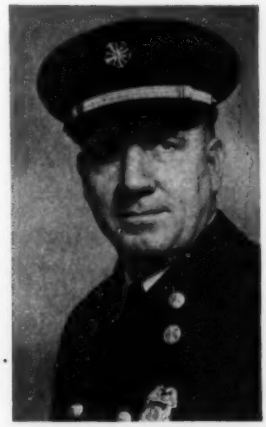

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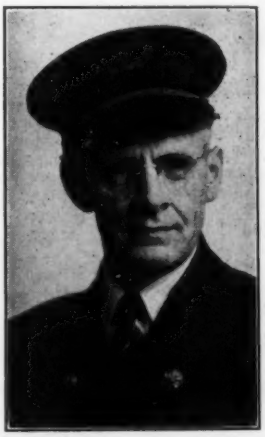

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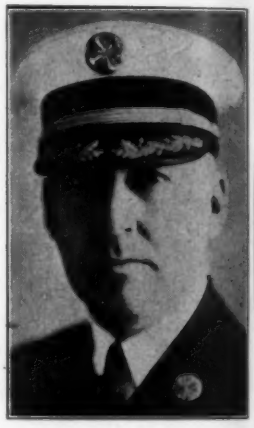

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Drillmaster Goes Afield to Learn

There is little excuse nowadays for a fire chief not being able to satisfy the thirst for knowledge. In the New York metropolitan area, one such source is the New York Fire Department. As the largest fire department in the world, and the busiest, it is to be expected that its officers and men should possess a knowledge of practical fire fighting second to none.

It isn't generally known that, busy as it is, the department frequently makes its facilities available to fire officers of neighboring areas. There is seldom a class at the Officers' School, for example, that does not include fire officers from near and far who have come to see and to learn from the men who have gained their experience in fire suppression the hard way. These visiting students include volunteer as well as professional, paid firemen.

One of the fire chiefs who has always recognized the value of training, and education in fire fighting for his men, is Hobart Strathearn who heads the Paterson, N. J. Fire Department. He sent his drill master, Batt. Chief Solomon Reines to the New York Fire Department Officers' School, a three months' course, incidentally, to keep abreast of the latest developments in fire protection and fire suppression.

The 28-week Officers' course covered lectures on fire department administration; discipline; operations; types and kinds of fires, etc. Chief Reines also witnessed a demonstration of water fog on oil fires; inspected the fire alarm bureau's system, the rescue company and marine flotilla.

Chief Reines, under direction of Chief Strathearn, will pass along his acquired knowledge to the Fire Department.

In still another step to keep his schooling up-to-date, Chief Strathearn sent Deputy Chief Walter L. Titus, recently assigned to his fire prevention bureau, to attend the Fire Inspectors Course at the University of Maryland.

Station Blaze Burns Firemen

Four Inglewood, Calif., firemen were burned, two seriously, in a freak blaze which damaged a 1924 stand-by rig in the enginehouse at 637 East Hargrave St.

The two most severely burned men were reportedly cleaning out a sediment bowl in the gasoline feed system of the reverse pumper when fuel ignited. The rig was destroyed, together with 1800 feet of hose valued at $3000. Flames also damaged the rear of the station.

PAUL DITZEL

The Cover Photo

Hot, threatening naphthalene storage fire some time ago along the Brooklyn, N. Y., waterfront, gave a three-alarm complement of fire fighters a long, hard fight before it was subdued. *Photo by Hellriegel and Heffernan, New York Fire Department.*

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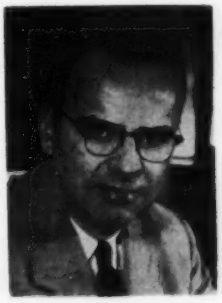

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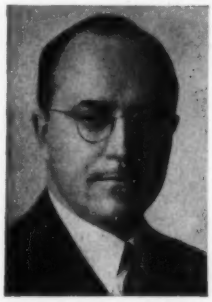

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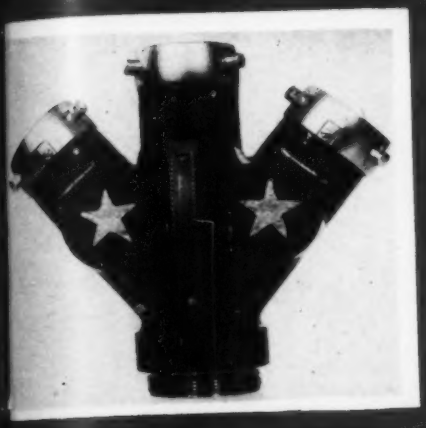

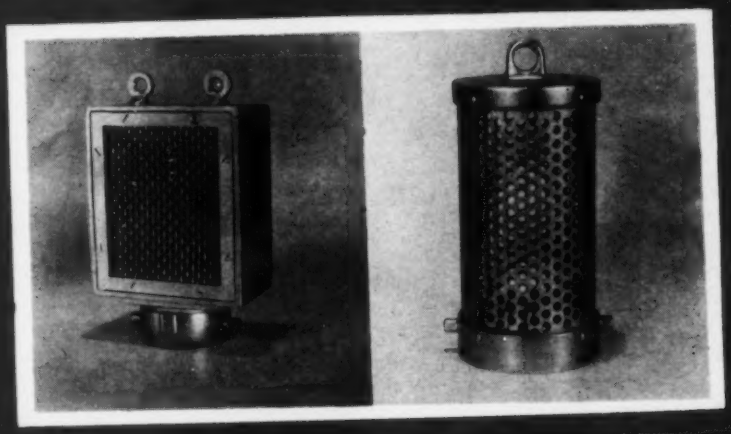

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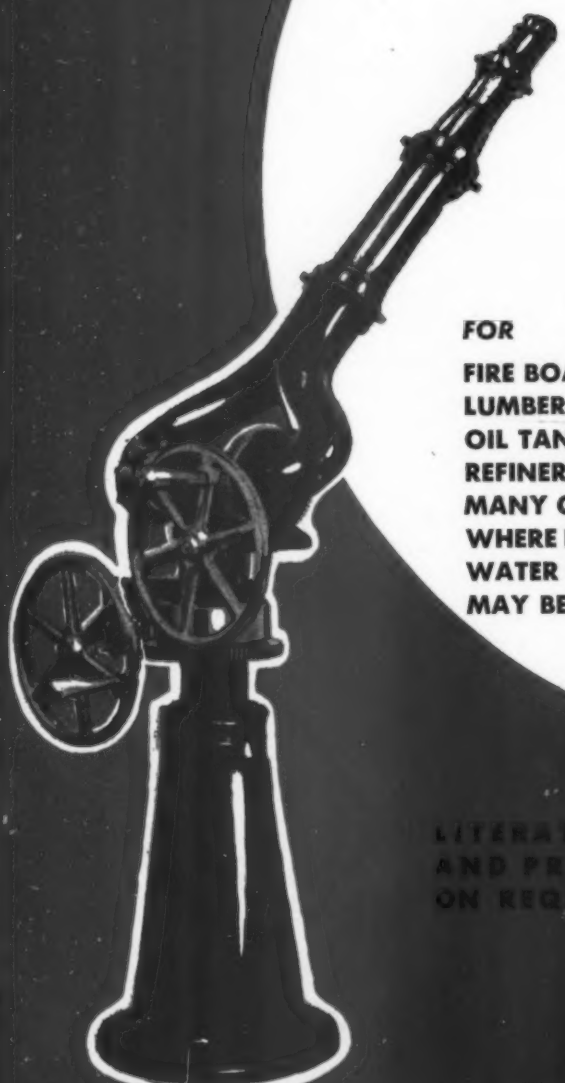

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Batteries
DELCO-REMY DIV., G. M. C. (Automotive)
GAMEWELL COMPANY
SAFA ALARM DIV., FYR-FYTER CO., THE
SEABERG & ASSOC., CARL M.
Bores
DARLEY & CO., W. S.
FEDERAL SIGN & SIGNAL CORP.
FYR-FYTER CO., THE
GAMEWELL COMPANY
SAFA ALARM DIV., FYR-FYTER CO., THE
SAFER ELECTRONIC FIRE ALARM CO., INC.
SEABERG & ASSOC., CARL M.
Cable
SEABERG & ASSOC., CARL M.
Central Station
AMERICAN DISTRICT TELEGRAPH CO.
FEDERAL SIGN & SIGNAL CO., INC.
FYR-FYTER CO., THE
GAMEWELL COMPANY
GRINNELL COMPANY, INC.
SEABERG & ASSOC., CARL M.
Home
BUFFALO FIRE APPLIANCE CORP.
FYR-FYTR CO., THE
FYR-LARM CO., INC.
PYRENE—C-O-TWO
Industrial
AMERICAN DISTRICT TELEGRAPH CO.
PYRENE—C-O-TWO
DARLEY & CO., W. S.
FEDERAL SIGN & SIGNAL CORP.
FYR-FYTER CO., THE
FYR-LARM CO., INC.
GAMEWELL COMPANY
GRINNELL COMPANY, INC.
SAFER ELECTRONIC FIRE ALARM, INC.
SEABERG & ASSOC., CARL M.
STERLING SIREN FIRE ALARM CO., INC.
Institutional
AMERICAN DISTRICT TELEGRAPH CO.
DARLEY & CO., W. S.
FYR-LARM CO., INC.
GAMEWELL COMPANY
GRINNELL COMPANY, INC.
PYRENE—C-O-TWO
SAFA ALARM DIV., FYR-FYTER CO., THE
SAFER ELECTRONIC FIRE ALARM, INC.
SEABERG & ASSOC., CARL M.
Municipal
DARLEY & CO., W. S.
FEDERAL SIGN & SIGNAL CORP.
FYR-FYTER CO., THE
FYR-LARM CO., INC.
GAMEWELL COMPANY
SAFA ALARM DIV., FYR-FYTER CO., THE
SAFER ELECTRONIC FIRE ALARM CO., INC.
SEABERG & ASSOC., CARL M.
STERLING SIREN FIRE ALARM CO., INC.
Recording Systems
GAMEWELL COMPANY
SAFA ALARM DIV., FYR-FYTER CO., THE
Sirens, Air Horns & Whistles
AMERICAN LAFRANCE CORPORATION
DARLEY & CO., W. S.
FEDERAL SIGN & SIGNAL CORP.
FYR-LARM CO., INC.
GAMEWELL COMPANY
PYLE-NATIONAL CO., THE
PORTABLE LIGHT CO., INC.
SAFA ALARM DIV., FYR-FYTER CO., THE
SEABERG & ASSOC., CARL M.
SIRENO CO., INC., THE
STERLING SIREN FIRE ALARM CO., INC.
Tape Systems
GAMEWELL COMPANY

APPARATUS HAND HOLDS
ELLCON CO., THE

APPARATUS WARNING DEVICES
Bells
AMERICAN LAFRANCE CORPORATION
ATTWOOD BRASS WORKS, INC.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FIRE MASTER CORPORATION
GAMEWELL COMPANY
GRINNELL COMPANY, INC.
H & H FIRE APPARATUS, INC. (Automatic)
WARD LAFRANCE TRUCK CORP.
Lights
AMERICAN LAFRANCE CORPORATION
ARGUSLITE CO.
BUCKEYE IRON & BRASS WORKS
DARLEY & CO., W. S.
FEDERAL SIGN & SIGNAL CORP.
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
GAMEWELL COMPANY
McDERMOTT CORP., JULIAN A.
NIELSEN-RIONDA, INC.
PORTABLE LIGHT CO., INC.
PYLE-NATIONAL CO., THE
SIRENO CO., INC., THE
TRIPPE MANUFACTURING COMPANY
U-C LITE MANUFACTURING CO.
Sirens
AMERICAN LAFRANCE CORPORATION
DARLEY & CO., W. S.
FEDERAL SIGN & SIGNAL CORP.
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
GAMEWELL COMPANY
NIELSEN-RIONDA, INC.
PORTABLE LIGHT CO., INC.
PYLE-NATIONAL CO., THE
SIRENO CO., INC., THE
STERLING SIREN FIRE ALARM CO., INC.
Whistles
DARLEY & CO., W. S.
GAMEWELL COMPANY
SAFA ALARM DIV., FYR-FYTER CO., THE

AUTOMOTIVE ELEC. EQUIPMENT
DELCO-REMY DIV., GENERAL MOTORS CORP.
LEECE-NEVILLE CO.

AXES & HATCHETS
ALLEN MANUFACTURING CO.
AMERICAN LAFRANCE CORPORATION
ATLAS SAFETY EQUIPMENT CO., INC. (Insulated)
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FIRE MASTER CORPORATION
FYR-FYTER CO., INC.
MANN EDGE TOOL COMPANY
POWHATAN BRASS & IRON WORKS
RANDOLPH LABORATORIES, INC.
UNIVERSAL FIRE APPARATUS CORP.

BADGES, INSIGNIA, ETC.
AMERICAN LAFRANCE CORPORATION
BLACKINTON CO., INC., V. H.
BRAXMAR CO., INC., THE C. S.
BULLARD CO., E. D. (Decals for Helmets)
CAIRNS AND BRO., INC.
CITY PATTERN SHOP, INC.
DARLEY & CO., W. S.
EVERSON-ROSS CO., INC.
FYR-FYTER CO., THE
NIELSEN-RIONDA, INC.
REESE, S. H.
RUSSELL UNIFORM CO.
WENTWORTH-FORMAN CO., INC.
WENDELL-NORTHWESTERN, INC.

BATTERIES (Nickel Cadmium)
BATTERY DIV., SONOTONE CORP.

BATTERY CHARGES
CARPENTER MANUFACTURING CO.
DARLEY & CO., W. S.
ONAN & SONS INC., D.W.
PIONEER GEN-E-MOTORS CORP.
SEABERG & ASSOC., CARL M.

BLANKETS, FIRE
BULLARD COMPANY, E. D.
DANIELS, INC., C. H.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
FULTON BAG & COTTON MILLS
INDUSTRIAL SAFETY SPECIALTIES CO.
MINE SAFETY APPLIANCES COMPANY
WHEELER PROTECTIVE APPAREL, INC.

BOOKS AND COURSES
DELEHANTY CORRESPONDENCE SCHOOL

BROOMS, FIRE FIGHTING
AMERICAN LAFRANCE CORP.
BROOKLYN FIBRE BROOM CO., INC.

CIVILIAN DEFENSE SUPPLIES
BOMGARDNER MFG. CO., THE
BULLARD CO., E. D.
CAIRNS & BRO., INC.
DU MONT LABORATORIES, INC.
FEDERAL SIGN & SIGNAL CORP. (Sirens and controls)
MINE SAFETY APPLIANCES CO.
WENTWORTH-FORMAN CO., INC.

CUTTERS, BAR, CHAIN, CABLE
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
KEY-NAK DIV., PRODUCERS & DISTRIBUTORS, INC.
MILWAUKEE ELECTRIC TOOL CO.
PORTER, INC., H. K.

CUTTING & WELDING EQUIPMENT
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
KEY-NAK DIV., PRODUCERS & DISTRIBUTORS, INC.
MILWAUKEE ELECTRIC TOOL CO.
WHEELER PROTECTIVE APPAREL, INC.

DOORS, APPARATUS, ELECTRIC
OVERHEAD DOOR CORP.

EJECTORS AND EXHAUSTERS, SMOKE
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
HONELITE CORPORATION
SUPER VACUUM MANUFACTURING CO.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

ENGINES
(Diesel or Gas)
DETROIT DIESEL ENGINE DIV., GENERAL MOTORS
FAIRBANKS, MORSE & CO.
INTERNATIONAL HARVESTER COMPANY
ONAN & SONS INC., D. W.
PIONEER GEN-E-MOTOR CORP.
WAUKESHA MOTOR COMPANY

EXTINGUISHERS
CO$_2$
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
RED COMET, INCORPORATED
Back Pack
SMITH AND CO., D. B.
Chimney Fire
FOARD & CO., F. C.
SMITH & CO., D. B.
Dry Chemical
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
ANSUL CHEMICAL COMPANY
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
RED COMET, INCORPORATED
Foam
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.

ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
NATIONAL FOAM SYSTEM, INC.
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
RED COMET, INCORPORATED

Soda & Acid
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
NATIONAL FOAM SYSTEM, INC.
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
RED COMET, INC.

Vaporizing Liquid
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE (Loaded Stream)
NATIONAL FOAM SYSTEM, INC.
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
RED COMET, INCORPORATED

Water
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
CHAMPION SPRAYER CO.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
PARCO PRODUCTS CO.
PROTECTOSEAL COMPANY
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
RED COMET, INCORPORATED
SAFETY FIRST PRODUCTS CORP.
SMITH AND COMPANY, D. B.
UNOX CO., DIV., McFARLAND MFG. CORP.

EXTINGUISHER LIQUIDS
AMERICAN LAFRANCE CORP.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
NATIONAL FOAM SYSTEM, INC.
NICEROL LTD.
PYRENE—C-O-TWO
RED COMET, INCORPORATED

FANS
SUPER VACUUM MFG. CO., INC.

FIRE ALARM & WATCHMAN'S REPORTING SERVICE
AMERICAN DISTRIICT TELEGRAPH CO.
FYR-LARM COMPANY
GAMEWELL COMPANY
SEABERG & ASSOC., CARL M.

FIRE DEPARTMENT SUPPLIES, MISC.
AKRON BRASS MFG. CO., INC.
ALLEN MFG. CO., W. D.
AMERICAN FIRE EQUIPMENT CO.
AMERICAN LAFRANCE CORP.
ATLAS SAFETY EQUIPMENT CO., INC.
ATTWOOD BRASS WORKS
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP.
BOMGARDNER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
CAIRNS AND BRO., INC.
DARLEY & CO., W. S.
DUAL-LITE COMPANY
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FIRE MASTER CORP.
FYR-FYTER CO., THE
HALPRIN SUPPLY COMPANY
HOLLOWAY & ASSOCIATES, GORDON B.
HOWE FIRE APPARATUS CO.
MAXIM MOTOR CO.
MILWAUKEE ELECTRIC TOOL CO.
OREN ROANOKE CORPORATION
PACIFIC REFLEX SIGNS
POWHATAN BRASS & IRON WORKS
PIRSCH & SONS CO., PETER
SMITH AND COMPANY, D. B.
UNIVERSAL FIRE APPARATUS CORP.
W-B MANUFACTURING CO.
WARD LAFRANCE TRUCK CORPORATION
WHEELER PROTECTIVE APPAREL, INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.
YOUNG FIRE EQUIPMENT CORP.

FIRE DETECTION SYSTEMS
AMERICAN DISTRICT TELEGRAPH CO.
DARLEY & CO., W. S.
FYR-LARM CO., INC.
GAMEWELL COMPANY
GRINNELL COMPANY, INC.
PYRENE—C-O-TWO
SEABERG & ASSOC., CARL M.

FIRE DOORS
VON DUPRIN DIV. VONNEGUT HARDWARE CO.

FIRE ESCAPES (Permanent)
AMERICAN FIRE EQUIPMENT CO. (Rope)

FIRE ESCAPES (Portable)
ATLAS SAFETY EQUIPMENT CO., INC.
DARLEY & CO., W. S.
MAXIM MOTOR CO.

FIRE RETARDANT MATERIALS
Paint, etc.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
WHEELER PROTECTIVE APPAREL, INC.

FIRST AID EQUIPMENT
AMERICAN LAFRANCE CORP.
BOMGARDNER MFG. CO., THE
BULLARD COMPANY, E. D.
CHESEBROUGH MANUFACTURING CO.
DARLEY & CO., W. S.
E & J MANUFACTURING CO.
EMERSON CO., J. H.
FYR-FYTER CO., THE
MINE SAFETY APPLIANCES COMPANY
PAC-KIT COMPANY
STEPHENSON CORPORATION
WASHINGTON PRODUCTS CO. (Cots)

FOAM—CHEMICAL—LIQUID
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
NATIONAL FOAM SYSTEM, INC.
NICEROL, LTD.
PYRENE—C-O-TWO
ROCKWOOD SPRINKLER COMPANY

FOAM GENERATORS OR PUMPS
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
GRINNELL COMPANY, INC.
HALE FIRE PUMP CO.
NATIONAL FOAM SYSTEM, INC.
PYRENE—C-O-TWO
ROCKWOOD SPRINKLER COMPANY

FORCIBLE ENTRY TOOLS
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
ATLAS SAFETY EQUIPMENT COMPANY, INC.
C. D. PIKE & FIRE HOOK MFG. CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
HOMELITE CORPORATION
KEY-HAK DIV., PRODUCERS & DISTRIBUTORS, INC.,
MANN EDGE TOOL COMPANY
MILWAUKEE ELECTRIC TOOL CO.
PIRSCH & SONS CO.
PORTER, INC., H. K.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
WOOSTER BRASS DIV., THE FYR-FYTER CO.

GAS INDICATORS & DETECTORS
BULLARD COMPANY, E. D.
KOEHLER MANUFACTURIING COMPANY
MINE SAFETY APPLIANCES COMPANY

GAS MASKS
ACME PROTECTION EQUIPMENT CO.
AMERICAN LAFRANCE CORP.
BULLARD CO., E. D.
FYR-FYTER CO., THE
MINE SAFETY APPLIANCES COMPANY

GAUGES
Testing
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Pressure
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
POWER EQUIPMENT CO.
UNIVERSAL FIRE APPARATUS CORP.

Compound
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
UNIVERSAL FIRE APPPARATUS CORP.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Piezometers
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

GENERATORS, AUTOMOTIVE
AMERICAN BOSCH DIV., AMERICAN BOSCH ARMA CORP.
AMERICAN LAFRANCE CORP.
DELCO-REMY DIV., G. M. C. (A.C. & D.C.)
LEECE-NEVILLE CO., THE

GOGGLES
BULLARD COMPANY, E. D.
CAIRNS & BRO., INC.
DARLEY & CO., W. S.
MINE SAFETY APPLIANCES COMPANY

HARDWARE FOR APPARATUS
ALLEN MFG. CO., W. D.
ALUMINUM LADDER COMPANY
ATTWOOD BRASS WORKS, INC.
EASTMAN CO., INC., SAMUEL
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
H & H FIRE APPARATUS, INC.
HOWE FIRE APPARATUS CO.
MAXIM MOTOR CO.
POWHATAN BRASS & IRON WORKS
UNIVERSAL FIRE APPARATUS CORP.

HOOK & PIKE POLES
AKRON BRASS MFG. CO., INC.
ALUMINUM LADDER COMPANY
AMERICAN LAFRANCE CORP.
ATLAS SAFETY EQUIPMENT CO., INC.
ATTWOOD BRASS WORKS, INC.
BUFFALO FIRE APPLIANCE CORP.
C-D PIKE & FIRE HOOK MFG. CO.
DUO-SAFETY LADDER CORP.
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
MAXIM MOTOR CO.
OREN ROANOKE CORP.
PIRSCH & SONS CO., PETER
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORP.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE
Cotton, R. L.
ALLEN MFG. CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BI-LATERAL FIRE HOSE CO.
BLAZE GUARD MFG. CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EUREKA FIRE HOSE DIV., U. S. RUBBER CO.
FABRIC FIRE HOSE COMPANY
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
HAMILTON RUBBER MFG. CORP.
HEWITT-ROBINS INCORPORATED
PACIFIC MARINE SUPPLY CO.
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION

Forestry
ALLEN MFG. CO., W. D.
AMERICAN RUBBER MFG. CO., THE
BI-LATERAL FIRE HOSE CO.
BLAZE GUARD MFG. CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EUREKA FIREHOSE DIV., U. S. RUBBER CO.
FABRIC FIRE HOSE COMPANY
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
HAMILTON RUBBER MFG. CORP.
PACIFIC MARINE SUPPLY CO.
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION

High Pressure
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP.
BI-LATERAL FIRE HOSE CO.
BLAZE GUARD MFG. CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EUREKA FIRE HOSE DIV., U. S. RUBBER CO.
FABRIC FIRE HOSE COMPANY
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
HAMILTON RUBBER MFG. CORP.
HEWITT-ROBINS INCORPORATED
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION
THERMOID COMPANY
UNIVERSAL FIRE APPARATUS CORP.

Chemical
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BI-LATERAL FIRE HOSE CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EUREKA FRE HOSE DIV., U. S. RUBBER CO.
FABRIC FIRE HOSE COMPANY
FIRE MASTER CORPORATION
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
HAMILTON RUBBER MFG. CORP.
HEWITT-ROBINS INCORPORATED
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION
THERMOID COMPANY

Suction
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BI-LATERAL FIRE HOSE CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EUREKA FIRE HOSE DIV., U. S. RUBBER CO.
FABRIC FIRE HOSE COMPANY
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
HAMILTON RUBBER MFG. CORP.
HEWITT-ROBINS INCORPORATED
PACIFIC MARINE SUPPLY CO.
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION
THERMOID COMPANY
UNIVERSAL FIRE APPARATUS CORP.

HOSE APPLIANCES
Expansion Rings, Brass
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
ATTWOOD BRASS WORKS, INC.
BELL-PIHL COMPANY
BI-LATERAL FIRE HOSE CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUCKEYE IRON & BRASS WORKS
BUFFALO FIRE APPLIANCE CORP.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EUREKA FIREHOUSE DIV., U. S. RUBBER CO.
EXCELSIOR BRASS MFG. CO.
FABRIC FIRE HOSE COMPANY
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
HEWITT-ROBINS, INC.
H & H FIRE APPARATUS, INC.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORP.
REPUBLIC RUBBER DIV., LEE RUBBER & TIRE CORP.
UNIVERSAL FIRE APPARATUS CORP.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Holders
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
ATTWOOD BRASS WORKS, INC.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FYR-FYTER CO., THE
HOWE FIRE APPARATUS CO.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Hydrant Gates
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FYR-FYTER CO., THE
McINTIRE BRASS WORKS, F. N.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Increasers
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FABRIC FIRE HOSE COMPANY
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
H & H FIRE APPARATUS, INC.
HOWE FIRE APPARATUS CO.
McINTIRE BRASS WORKS, F. N.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Reducers
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FABRIC FIRE HOSE COMPANY
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
H & H FIRE APPARATUS, INC.
HOWE FIRE APPARATUS CO.
McINTIRE BRASS WORKS, F. N.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Siamese and Y-fittings
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
EASTMAN CO., INC., SAMUEL
EXCELSIOR BRASS MFG. CO.
FABRIC FIRE HOSE COMPANY
FYR-FYTER CO., THE
HOWE FIRE APPARATUS CO.
McINTIRE BRASS WORKS, F. N.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Siphons
AMERICAN LAFRANCE CORP.
AKRON BRASS MFG. CO., INC.
PACIFIC MARINE SUPPLY CO.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE BRIDGES
DARLEY & CO., W. S.
FYR-FYTER CO., THE
H & H FIRE APPARATUS, INC.
MAXIM MOTOR CO.
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE CABINET UNITS
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
PACIFIC MARINE SUPPLY CO.
RANDOLPH LABORATORIES, INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE CARTS, REELS, RACKS
ALLEN MANUFACTURING CO., W. D.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
ARDMORE PRODUCTS (Reels)
ATTWOOD BRASS WORKS, INC.
BAR-WAY MANUFACTURING CO.
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP. (Reels)
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
HANNAY & SON, INC., CLIFFORD B. (Reels, Hand & Electric)
H & H FIRE APPARATUS, INC.
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
PYRENE—C-O-TWO
RANDOLPH LABORATORIES, INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE CLAMPS
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
ATTWOOD BRASS WORKS, INC.
BI-LATERAL FIRE HOSE CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
HEWITT-ROBINS, INC.
PACIFIC MARINE SUPPLY CO.
PIRSCH & SONS CO., PETER
POWHATAN BRASS & IRON WORKS
SMITH & CO., D. B.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE CLEANER
BI-LATERAL FIRE HOSE CO.

HOSE COUPLINGS, ADAPTERS WRENCHES
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
ATTWOOD BRASS WORKS, INC.
BAR-WAY MANUFACTURING CO. (Couplings, High Pressure)
BI-LATERAL FIRE HOSE CO.
BOSTON WOVEN HOSE & RUBBER CO.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO., INC.
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F., THE
HEWITT-ROBINS INCORPORATED
H & H FIRE APPARATUS, INC.
HOWE FIRE APPARATUS CO.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
QUAKER RUBBER CORP.
RANDOLPH LABORATORIES, INC.
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION
S-T HYDRANT WRENCH COMPANY
THERMOID COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE DRYERS
AMERICAN LAFRANCE CORP.
APPROVED FIRE EQUIPMENT CO., INC.
CIRCUL-AIR CORPORATION
DARLEY & CO., W. S.
FYR-FYTER CO., THE

HOSE EXPANDERS
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BELL-PINL COMPANY
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE JACKETS
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BOSTON WOVEN HOSE & RUBBER CO.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F., THE
REPUBLIC RUBBER DIVISION, LEE RUBBER & TIRE CORPORATION
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HOSE STORAGE RACKS
CIRCUL-AIR CORPORATION
ELKHART BRASS MFG. CO., INC.
W-B MANUFACTURING CO.

HOSE WASHING MACHINE
AMERICAN LAFRANCE CORP.
CIRCUL-AIR CORPORATION
THERMOID COMPANY

HYDRANT WRENCHES
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BI-LATERAL FIRE HOSE CO.
BUFFALO FIRE APPLIANCE CORP.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
McINTIRE BRASS WORKS, F. N.
MUELLER CO.
POWHATAN BRASS & IRON WORKS
S-T HYDRANT WRENCH CO.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

HYDRANTS
DARLEY & CO., W. S.
GRINNELL COMPANY, INC.
MUELLER CO.
WATEROUS COMPANY

JACKS
PORTER INCORPORATED, H. K.

LADDERS
Aerial
AMERICAN LAFRANCE CORP.
DUO-SAFETY LADDER CORP.
MAXIM MOTOR CO.
MEMCO AERIAL LADDER CO.
PIRSCH & SONS CO., PETER

Metal
ALUMINUM LADDER CO.
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
DUO-SAFETY LADDER CORP.
FYR-FYTER CO., THE
MAXIM MOTOR CO.,
MEMCO AERIAL LADDER CO.
PIRSCH & SONS CO., PETER
SEAGRAVE CORPORATION
WERNER CO., INC., R. D. (Aluminum)

Rope
ATLAS SAFETY EQUIPMENT CO., INC.

Wood
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
DUO-SAFETY LADDER CO.
FOUR WHEEL DRIVE AUTO CO.
FYR-FYTER CO., THE
MAXIM MOTOR CO.,
PIRSCH & SONS CO., PETER
SEAGRAVE CORPORATION
STEPHENSON CORPORATION

LIFE BELTS
AMERICAN LAFRANCE CORP.
ATLAS SAFETY EQUIPMENT CO., INC.
BULLARD COMPANY, E. D.
CAIRNS AND BRO., INC.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
MEMCO AERIAL LADDER CO.
STEPHENSON CORPORATION
WOOSTER BRASS DIV., THE FYR-FYTER CO.

LIFE GUNS
DARLEY & CO., W. S.
PACIFIC MARINE SUPPLY CO.

LIGHTS
Emergency, Automatic
CARPENTER MANUFACTURING CO.
U-C LITE MANUFACTURING CO.

Hand Lamps
AMERICAN LAFRANCE CORP.
ARGUSLITE CO.
CARPENTER MANUFACTURING CO.
DARLEY & CO., W. S.
DUAL-LITE COMPANY
FAIRBANKS-MORSE & CO.
KOEHLER MANUFACTURING CO.
McDERMOTT CORP., JULIAN A.
MINE SAFETY APPLIANCES COMPANY
NATALE MACHINE & TOOL CO.
PACIFIC MARINE SUPPLY CO.
PORTABLE LIGHT CO., INC.
SIRENO CO., INC., THE
U-C LITE MANUFACTURING CO.

Flares
McDERMOTT CORP., JULIAN A.
U-C LITE MANUFACTURING CO.

Floodlights
AMERICAN LAFRANCE CORP.
ARGUSLITE CO.
BULLARD CO., E. D.
CARPENTER MANUFACTURING CO.
DARLEY & CO., W. S.
HOMELITE CORPORATION
McDERMOTT CORP., JULIAN A.
NATALE MACHINE & TOOL CO.
PORTABLE LIGHT CO., INC.
PYLE-NATIONAL CO., THE
SIRENO CO., INC., THE
U-C LITE MANUFACTURING CO.

Searchlights
AMERICAN LAFRANCE CORP.
ARGUSLITE CO.
CARPENTER MANUFACTURING CO.
DARLEY & CO., W. S.
KOEHLER MANUFACTURING CO.
McDERMOTT CORP., JULIAN A.
NATALE MACHINE & TOOL CO.
PORTABLE LIGHT CO., INC.
SIRENO CO., INC., THE
U-C LITE MANUFACTURING CO.

Spotlights
ARGUSLITE CO.
CARPENTER MFG. CO.
KOEHLER MFG. CO.
PORTABLE LIGHT CO., INC.
SIRENO CO., INC., THE
U-C LITE MANUFACTURING CO.

LIGHTING PLANTS (Portable; stationary)
AMERICAN LAFRANCE CORP.
CARPENTER MANUFACTURING CO.
DARLEY & CO., W. S.
FAIRBANKS-MORSE & CO. (Portable)
HOMELITE CORPORATION
KOHLER CO.
MASTER VIBRATOR CO.
ONAN & SONS, INC., D. W.
PIONEER GEN-E-MOTOR CORP.
UNITED STATES MOTORS CORP.

LOUD SPEAKERS
Public Address Systems
AUDIO EQUIPMENT CO., INC.
FYR-FYTER CO., THE
GENERAL ELECTRIC COMPANY
MOTOROLA INC.
SAFA ALARM DIV., FYR-FYTER CO., THE
SEABERG & ASSOC., CARL M.

Electric Megaphones
AUDIO EQUIPMENT CO., INC.
BULLARD COMPANY, E. D.
DARLEY & CO., W. S.

MOTOR APPARATUS
Ambulances
APPROVED FIRE EQUIPMENT CO., INC.
BOMGARDNER MFG. CO., THE
CHRISTOPHER CO., THE
H & H FIRE APPARATUS, INC.
INTERNATIONAL HARVESTER COMPANY
MILLER COMPANY, A. J.
NATIONAL BODY MFG. CO.
SHARPSVILLE STEEL FABRICATORS, INC.
SUPERIOR COACH CORP.

Chassis
FORD MOTOR COMPANY
MOTOR TRUCK DIV., INTERNATIONAL HARVESTER CO.

Crash Trucks
AMERICAN LAFRANCE CORP.
ARMY'S FIRE SERVICE
APPROVED FIRE EQUIPMENT CO., INC.
BEAN DIVISION, JOHN; FOOD MACHINERY CHEMICAL CORP.
BECK & CO., C. D.
BLITZ BUGGY COMPANY
BRUMBAUGH BODY CO.
CARDOX CORP.
CHRISTOPHER CO., THE
DARLEY & CO., W. S.
DECKER BROTHERS
FIRE FIGHTER TRUCK CO.
FIRE MASTER CORP.
FOUR WHEEL DRIVE AUTO CO.
GERSTENSLAGER CO.
H & H FIRE APPARATUS, INC.
HOWE FIRE APPARATUS CO.
INTERNATIONAL HARVESTER COMPANY
MACK MANUFACTURING CORPORATION
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
PIRSCH & SONS CO., PETER
PYRENE—C-O-TWO
ROBINSON, A. F.

SEAGRAVE CORPORATION
SHARPSVILLE STEEL FABRICATORS, INC.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
YOUNG FIRE EQUIPMENT CORP.

Ladder Trucks, Aerial

AMERICAN FIRE APPARATUS CO.
AMERICAN LAFRANCE CORP.
APPROVED FIRE EQUIPMENT CO., INC.
DARLEY & CO., W. S.
FOUR WHEEL DRIVE AUTO CO.
INTERNATIONAL HARVESTER COMPANY
MACK MANUFACTURING CORPORATION
MAXIM MOTOR CO.
PIRSCH & SONS CO., PETER
SHARPSVILLE STEEL FABRICATORS, INC.
SEAGRAVE CORPORATION
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORP.

Pumpers and Hose Cars

AMERICAN FIRE APPARATUS CO.
AMERICAN LAFRANCE CORP.
APPROVED FIRE EQUIPMENT CO., INC.
ARMY'S FIRE SERVICE
BEAN DIVISION, JOHN; FOOD MACHINERY & CHEMICAL CORP.
BECK & CO., INC., C. D.
BLITZ BUGGY COMPANY
BOARDMAN CO., THE
BRUMBAUGH BODY CO.
CHRISTOPHER CO., THE
DARLEY & CO., W. S.
DECKER BROTHERS
FIRE FIGHTER TRUCK CO.
FIRE MASTER CORPORATION
FOUR WHEEL DRIVE AUTO CO.
GERSTENSLAGER CO.
H & H FIRE APPARATUS, INC.
HOWE FIRE APPARATUS CO.
INTERNATIONAL HARVESTER CO.
MACK MANUFACTURING CORPORATION
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
PIRSCH & SONS CO., PETER
SEAGRAVE CORPORATION
SHARPSVILLE STEEL FABRICATORS, INC.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
YOUNG FIRE EQUIPMENT CORP.

Pumpers, High Pressure Fog

AMERICAN FIRE APPARATUS CO.
AMERICAN LAFRANCE CORP.
APPROVED FIRE EQUIPMENT CO., INC.
ARMY'S FIRE SERVICE
ASSOCIATED FIRE EQUIPMENT CO.
BEAN DIVISION, JOHN; FOOD MACHINERY & CHEMICAL CORP.
BECK & CO., INC., C. D.
BLITZ BUGGY COMPANY
BOARDMAN CO., THE
CHRISTOPHER CO., THE
DARLEY & CO., W. S.
FIRE MASTER CORPORATION
FOUR WHEEL DRIVE AUTO CO.
H & H FIRE APPARATUS CO., INC.
HOWE FIRE APPARATUS CO.
INTERNATIONAL HARVESTER COMPANY
MACK MANUFACTURING CORPORATION
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
PIRSCH & SONS CO., PETER
SEAGRAVE CORPORATION, THE
SHARPSVILLE STEEL FABRICATORS, INC.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
YOUNG FIRE EQUIPMENT CORP.

Rescue and Squad Trucks

AMERICAN LAFRANCE CORP.
APPROVED FIRE EQUIPMENT CO., INC.
BEAN DIVISION, JOHN; FOOD MACHINERY & CHEMICAL CORP.
BOARDMAN CO., THE
BRUMBAUGH BODY CO.
CHRISTOPHER CO., THE
DARLEY & CO., W. S.
DECKER BROTHERS
FOUR WHEEL DRIVE AUTO CO.
GERSTENSLAGER CO.
H & H FIRE APPARATUS CO.
INTERNATIONAL HARVESTER COMPANY
MACK MANUFACTURING CORP.
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
PIRSCH & SONS CO., PETER
SEAGRAVE CORPORATION, THE
SHARPSVILLE STEEL FABRICATORS, INC.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
YOUNG FIRE EQUIPMENT CORP.

Tank Trucks

APPROVED FIRE EQUIPMENT CO., INC.
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP.
BOARDMAN CO., THE
CHRISTOPHER CO., THE
DARLEY & CO., W. S.
FIRE MASTER CORPORATION
FOUR WHEEL DRIVE AUTO CO.
H & H FIRE APPARATUS, INC.
HOWE FIRE APPPARATUS CO.
INTERNATIONAL HARVESTER COMPANY
MACK MANUFACTURING CORP.
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
PIRSCH & SONS CO., PETER
SEAGRAVE CORPPORATION
SHARPSVILLE STEEL FABRICATORS, INC.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
YOUNG FIRE EQUIPMENT CORP.

Utility and Repair Trucks

FOUR WHEEL DRIVE AUTO CO.
H & H FIRE APPARATUS, INC.
INTERNATIONAL HARVESTER COMPANY
MAXIM MOTOR CO.
OREN ROANOKE CORPORATION
SHARPSVILLE STEEL FABRICATORS, INC.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORPORATION
YOUNG FIRE EQUIPMENT CORP.

NETS, LIFE AND TRAINING

ATLAS SAFETY EQUIPMENT COMPANY, INC.
BULLARD CO., E. D. (Life)
DARLEY & CO., W. S.

NOZZLES

Cellar Pipe

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
McINTIRE BRASS WORKS, F. N.
POWHATAN BRASS & IRON WORKS
ROCKWOOD SPRINKLER COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Deck Guns

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO. INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
McINTIRE BRASS WORKS, F. N.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Deluge Sets

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO. INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
McINTIRE BRASS WORKS, F. N.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Distributor

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
ANSUL CHEMICAL COMPANY
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
GOLD CREST SAFETY EQUIPMENT CORP.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Foam

AKRON BRASS MFG. CO., INC.,
AMERICAN LAFRANCE CORP.
CARDOX CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
NATIONALL FOAM SYSTEM, INC.
NICEROL, LTD.
POWHATAN BRASS & IRON WORKS
PYRENE—C-O-TWO
ROCKWOOD SPRINKLER COMPANY
UNOX CO., DIV., McFARLAND MFG. CORP.

Fog

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
ATTWOOD BRASS WORKS, INC.
BEAN DIVISION, JOHN; FOOD MACHINERY & CHEMICAL CORP.
BETE FOG NOZZLE, INC.
BUFFALO FIRE APPLIANCE CORP.
BUCKEYE IRON & BRASS WORKS
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
FOG NOZZLE INTERNATIONAL, DIV. OF AKRON BRASS
FYR-FYTER CO., THE
GRINNELL COMPANY
MYERS & BRO. CO., F. E.
McINTIRE BRASS WORKS, F. N.
NATIONAL FOAM SYSTEM, INC.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
ROCKWOOD SPRINKLER COMPANY
UNOX CO., DIV., McFARLAND MFG. CORP.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Fog-Foam

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
CARDOX CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO.,
FYR-FYTER CO., THE
ROCKWOOD SPRINKLER COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Heavy Stream

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
ANSUL CHEMICAL COMPANY
BOSTON WOVEN HOSE & RUBBER CO.
CARDOX CORP.
DARLEY & CO., W. S.
EASTMAN CO., SAMUEL
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
McINTIRE BRASS WORKS, F. N.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Pipes, Ladder

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
FYR-FYTER CO., THE
McINTIRE BRASS WORKS, F. N.
POWHATAN BRASS & IRON WORKS
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Pipes, Play

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
BOSTON WOVEN HOSE & RUBBER CO.
BUCKEYE IRON & BRASS WORKS
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FYR-FYTER CO., THE
GRINNELL COMPANY, INC.
McINTIRE BRASS WORKS, F. N.
NATIONAL FOAM SYSTEM, INC.
POWHATAN BRASS & IRON WORKS
PYRENE—C-O-TWO
ROCKWOOD SPRINKLER COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Shut-Off

AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
AMERICAN RUBBER MFG. CO., THE
ANSUL CHEMICAL COMPANY
BUCKEYE IRON & BRASS WORKS
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FYR-FYTER CO., THE
McINTIRE BRASS & IRON WORKS
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
ROCKWOOD SPRINKLER COMPANY
SMITH & CO., INC., D. B.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

OIL DETERGENT

Fuel Oil Fire Preventative

FOARD & CO., F. C.

OUTBOARD MOTORS

JOHNSON MOTORS
PACIFIC MARINE SUPPLY CO.

OXYGEN REVIVING APPARATUS

Aspirators

BOMGARDNER MFG. CO., THE
BULLARD CO., E. D.
E & J MANUFACTURING COMPANY
EMERSON CO., J. H.
MINE SAFETY APPLIANCES COMPANY
STEPHENSON CORPORATION

Inhalators

AMERICAN LAFRANCE CORP.
BOMGARDNER MFG. CO., THE
BULLARD CO., E. D.
CYCLE-FLO COMPANY
DARLEY & CO., W. S.
E & J MANUFACTURING COMPANY
EMERSON CO., J. H.
FYR-FYTER CO., THE
MINE SAFETY APPLIANCES COMPANY
SCOTT AVIATION CORP.
STEPHENSON CORPORATION

Respirators

BOMGARDNER MFG. CO., THE
BULLARD CO., E. D.
E & J MANUFACTURING COMPANY
EMERSON CO., J. H.
MINE SAFETY APPLIANCES COMPANY
SCOTT AVIATION CORP.
STEPHENSON CORPORATION

Resuscitators

AMERICAN LAFRANCE CORP.
BOMGARDNER MFG. CO., THE
BULLARD CO., E. D.
DARLEY & CO., W. S.
E & J MANUFACTURING COMPANY
EMERSON CO., J. H.
MINE SAFETY APPLIANCES COMPANY
STEPHENSON CORPORATION

PANIC HARDWARE

VON DUPRIN DIV., VONNEGUT HARDWARE CO.

POLYSTER FIBRE FOR FIRE HOSE

E. I. DUPONT DE NEMOURS & CO. (INC.), TEXTILE FIBRES DEPT.
FABRIC FIRE HOSE COMPANY
QUAKER PIONEER RUBBER MILLS
QUAKER RUBBER CORPORATION

POWER PLANTS, ELECTRIC

Portable

AMERICAN-LAFRANCE CORP.
DARLEY & CO., W. S.
FAIRBANKS-MORSE & CO.
FYR-FYTER CO., THE
HOMELITE CORPORATION
KOHLER CO.
MASTER VIBRATOR CO.
MAXIM MOTOR CO.
ONAN & SONS, INC., D. W.
PIONEER GEN-E-MOTOR CORP.
UNITED STATES MOTORS CORP.
WINCHARGER CORP.

Stationary

AMERICAN-LAFRANCE-I CORP.
DARLEY & CO., W. S.
FAIRBANKS-MORSE & CO.
HOMELITE CORPORATION
KOHLER CO.
MASTER VIBRATOR CO.
MAXIM MOTOR CO.
ONAN & SONS, INC., D. W.
PIONEER GEN-E-MOTOR CORP.
UNITED STATES MOTORS CORP.
WINCHARGER CORP.

POWER STEERING, HYDRAULIC

GARRISON MFG. COMPANY

POWER TOOLS, PORTABLE

KEY-HAK DIV., PRODUCERS & DISTRIBUTORS, INC.
MILWAUKEE ELECTRIC TOOL CORP.

POWER UNITS, FIRE BOAT

INTERNATIONAL HARVESTER CO.
DETROIT DIESEL ENGINE DIV., GENERAL MOTORS

PRESSURE COMPUTER

A & W SPECIALTY CO.

PROPORTIONERS
AMERICAN LAFRANCE CORP.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
HALE FIRE PUMP CO. (Foam)
NATIONAL FOAM SYSTEM, INC.
PYRENE MANUFCTURING COMPANY
ROCKWOOD SPRINKLER COMPANY
UNOX CO., DIV., McFARLAND MFG. CORP.

PUMPS
Fire Apparatus
AMERICAN FIRE EQUIPMENT CO.
AMERICAN LAFRANCE CORP.
AMERICAN-MARSH PUMPS, INC.
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP.
DARLEY & CO., W. S..
FAIRBANKS-MORSE & CO.
FIRE MASTER CORPORATION
FOUR WHEEL DRIVE AUTO CO.
GORMAN-RUPP CO.
HALE FIRE PUMP CO.
HOMELITE CORPORATION
HOWE FIRE APPARATUS CO.
MARINE PRODUCTS CO.
OBERDORFER FOUNDRIES, INC.
PACIFIC MARINE SUPPLY CO.
PIRSCH & SONS CO., PETER
UNIVERSAL FIRE APPARATUS CORP.
WATEROUS COMPANY

Hand Pumps
CHAMPION SPRAYER CO.
DARLEY & CO., W. S.
MYERS & BRO. CO., F. E.
OBERDORFER FOUNDRIES, INC.
PACIFIC MARINE SUPPLY CO.
PARCO PRODUCTS CO.
SMITH AND COMPANY, D. B.

High Pressure
AMERICAN LAFRANCE CORP.
AMERICAN-MARSH PUMPS, INC.
ASSOCIATED FIRE EQUIPMENT CO.
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP.
DARLEY & CO., W. S.
FAIRBANKS, MORSE & CO.
GORMAN-RUPP CO.
HALE FIRE PUMP COMPANY
MARINE PRODUCTS COMPANY
MARLOW PUMPS
MYERS & BRO. CO., F. E.
WATEROUS COMPANY

Hydrant Dewatering Pumps
DARLEY & CO., W. S.
FAIRBANKS, MORSE & CO.
GORMAN-RUPP CO.
MARINE PRODUCTS COMPANY
MARLOW PUMPS
OBERDORFER FOUNDRIES, INC.
WATEROUS COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Portable
AMERICAN LAFRANCE CORP
AMERICAN-MARSH PUMPS, INC.
CHAMPION SPRAYER CO.
DARLEY & CO., W. S.
FAIRBANKS, MORSE & CO.
GORMAN-RUPP CO.
HALE FIRE PUMP CO.
HOMELITE CORPORATION
MARINE PRODUCTS COMPANY
MARLOW PUMPS
MAXIM MOTOR CO.
OBERDORFER FOUNDRIES, INC.
PACIFIC MARINE SUPPLY CO.
PARCO PRODUCTS CO. (Knapsack)
SMITH AND COMPANY, D. B.
SOLAR AIRCRAFT CO.
UNIVERSAL FIRE APPARATUS CORP.
WARD LAFRANCE TRUCK CORP.

Suction Boosters
AMERICAN FIRE EQUIPMENT CO.
DARLEY & CO., W. S.
FAIRBANKS, MORSE & CO.
GORMAN-RUPP CO.
OBERDORFER FOUNDRIES, INC.

Trailer Mounted
BEAN DIV., JOHN; FOOD MACHINERY & CHEMICAL CORP.
DARLEY & CO., W. S.
FAIRBANKS, MORSE & CO.
HALE FIRE PUMP CO.
MARINE PRODUCTS CO.
MAXIM MOTOR CO.
OBERDORFER FOUNDRIES, INC.
OREN ROANOKE CORPORATION
PARIS, INC., HENRY H.
WATEROUS COMPANY

RADIO—INDUCTION
SEABERG & ASSOC., CARL M.

RADIO—TWO WAY, THREE WAY
DU MONT LABORATORIES, INC.
GENERAL ELECTRIC COMPANY
INDUSTRIAL RADIO CORP..
MOTOROLA, INC.
SEABERG & ASSOC., CARL M.

RADIO—WALKIE TALKIE
DU MONT LABORATORIES, INC.
GENERAL ELECTRIC COMPANY
INDUSTRIAL RADIO CORP.
MOTOROLA, INC.

RADIO RECEIVERS
DUMONT LABORATORIES, INC.
GENERAL ELECTRIC COMPANY
MOTOROLA, INC.
RADIO APPARATUS CORP.

RECORDERS
GAMEWELL COMPANY

RESPIRATORY PROTECTIVE EQUIPMENT
Masks
ACME PROTECTION EQUIPMENT CO.
AMERICAN LAFRANCE CORP.
BULLARD COMPANY, E. D.
CYCLE-FLO COMPANY
DARLEY & CO., W. S.
FYR-FYTER CO., THE
MINE SAFETY APPLIANCES COMPANY
SCOTT AVIATION CORP.

Oxygen Breathing Equipment
AMERICAN LAFRANCE CORP.
BOMGARDNER MFG. CO., THE
BULLARD COMPANY, E. D.
CYCLE-FLO COMPANY
FYR-FYTER CO., THE
MINE SAFETY APPLIANCES COMPANY
STEPHENSON CORPORATION

Air Breathing Equipment
ACME PROTECTION EQUIPMENT CO.
AMERICAN LAFRANCE CORP.
BOMGARDNER MFG. CO., THE
BULLARD COMPANY, E. D.
CORNELIUS CO., THE (Air Compressors)
MINE SAFETY APPLIANCES COMPANY
SCOTT AVIATION CORP.
STEPHENSON CORPORATION

SAFETY EQUIPMENT FOR FLAMMABLE LIQUIDS
FYR-FYTER CO., THE
KOEHLER MFG. CO.
PROTECTOSEAL CO.

SALVAGE COVERS
AMERICAN LAFRANCE CORP.
DANIELS, INC., C. R.
DARLEY & CO., W. S.
FULTON BAG & COTTON MILLS
FYR-FYTER CO., THE

SAWS, CHAIN
HOMELITE CORPORATION
MILWAUKEE ELECTRIC TOOL CORP.

SIGNS & EMBLEMS, APPARATUS
ATTWOOD BRASS WORKS, INC.
BOMGARDNER MFG. CO., THE
CAIRNS & BRO., INC.
GOLD CREST SAFETY EQUIPMENT CORP.
H & H FIRE APPARATUS, INC.
LANE, E. B., DISTRIBUTOR (Plastic Signs)
NIELSEN-RIONDA, INC.
PACIFIC REFLEX SIGNS
REESE, S. H.
RUSSELL UNIFORM CO.
WENDELL-NORTHWESTERN, INC.
WENTWORTH-FORMAN CO., INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

SLIDING POLES, FIRE STATION
McINTIRE BRASS WORKS, F. N.

SMOKE GENERATORS FOR DRILLS
HOMELITE CORPORATION
SUPERIOR SIGNAL CO.

SMOKE & ODOR REMOVERS (Chemical)
DARLEY & CO., W. S.
FOARD & CO., F. C.
FYR-FYTER CO., THE
SUPER VACUUM MFG. CO., INC.

SMOKE DETECTORS
AMERICAN DISTRICT TELEGRAPH CO.
PYRENE-C-O-TWO
SEABERG & ASSOC., CARL M.
MASTER VIBRATOR CO.

SPACE HEATERS, PORTABLE
MASTER VIBRATOR CO.

SPLINTS
BULLARD COMPANY, E. D.
MINE SAFETY APPLIANCES COMPANY
STEPHENSON CORPORATION
TIMMINS SPLINT CO.

SPRINKLER SUPERVISORY SERVICE
AMERICAN DISTRICT TELEGRAPH CO.
GAMEWELL COMPANY
GRINNELL COMPANY, THE
SEABERG & ASSOC., CARL M.

SPRINKLERS & SYSTEMS
AKRON BRASS MFG. CO., INC.
FOG NOZZLE INTERNATIONAL, DIV. OF AKRON BRASS
GRINNELL COMPANY, INC.
RANDOLPH LABORATORIES, INC. (Systems, CO_2)
ROCKWOOD SPRINKLER COMPANY
SEABERG & ASSOC., CARL M.

STRAINERS, MAIN & SUCTION
AKRON BRASS MFG. CO., INC.
EASTMAN CO. INC., SAMUEL
FYR-FYTER CO.
H & H FIRE APPARATUS, INC.
McINTIRE BRASS WORK, F. N.
MAXIM MOTOR CO.
PACIFIC MARINE SUPPLY CO.
WOOSTER BRASS DIV., THE

STRETCHERS
BOMGARDNER MFG. CO., THE
BULLARD CO., E. D.
DARLEY & CO., W. S.
MINE SAFETY APPLIANCES COMPANY
STEPHENSON CORPORATION
WASHINGTON PRODUCTS CO.

TELEPHONE—EMERGENCY-FIELD
MINE SAFETY APPLIANCES COMPANY
SEABERG & ASSOC., CARL M.

THREAD CUTTING EQUIPMENT
AKRON BRASS MFG. CO., INC.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
WOOSTER BRASS DIV., THE FYR-FYTER CO.

TRAFFIC CONTROL, RADIO
ELECTRONIC PROTECTION, INC.

TROPHIES & PLAQUES
BLACKINTON & CO., INC., V. H.
CITY PATTERN SHOP, INC.
NIELSEN-RIONDA, INC.
WENDELL-NORTHWESTERN, INC.

THAWING EQUIPMENT, HYDRANT
AMERICAN-LAFRANCE CORP.
DARLEY & CO., W. S.

VALVES
Hose
AKRON BRASS MFG. CO., INC.
AMERICAN RUBBER MFG. CO., THE
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FYR-FYTER CO., THE
GRINNELL COMPANY, INC.
HALE FIRE PUMP CO.
McINTIRE BRASS WORKS, F. .N.
PACIFIC MARINE SUPPLY CO.
POWHATAN BRASS & IRON WORKS
ROCKWOOD SPRINKLER COMPANY
WATEROUS COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Hydrant—Gate
AKRON BRASS MFG. CO., INC.
AMERICAN LAFRANCE CORP.
BUCKEYE IRON & BRASS WORKS
BUFFALO FIRE APPLIANCE CORP.
DARLEY & CO., W. S.
EASTMAN CO., INC., SAMUEL
ELKHART BRASS MFG. CO., INC.
EXCELSIOR BRASS MFG. CO.
FYR-FYTER CO., THE
GRINNELL COMPANY, INC.
McINTIRE BRASS WORKS, F. N.
MUELLER CO.
POWHATAN BRASS & IRON WORKS
WATEROUS COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

Relief
AKRON BRASS MFG. CO., INC.
BEAN DIV., JOHN, FOOD MACHINERY & CHEMICAL CORP.
DARLEY & CO., W. S.
ELKHART BRASS MFG. CO., INC.
HALE FIRE PUMP CO.
PACIFIC MARINE SUPPLY CO.
WATEROUS COMPANY
WOOSTER BRASS DIV., THE FYR-FYTER CO.

WATER TANKS, Portable, Collapsible
CHAMPION SPRAYER CO. (Portable)
FOL-DA-TANK CO.
HARODIKES, INCORPORATED
PACIFIC MARINE SUPPLY CO.

WEARING APPAREL
Protective Clothing, Asbestos, etc.
AMERICAN LAFRANCE CORP.
BULLARD CO., E. D.
DARLEY & CO., W. S.
GLOBE MFG. CO.
JANESVILLE APPAREL CO. (also aluminized asbestos)
RUSSELL UNIFORM CO.
INDUSTRIAL SAFETY SPECIALTIES CO.
MINE SAFETY APPLIANCES COMPANY
RUSSELL UNIFORM CO.
WHEELER PROTECTIVE APPAREL, INC.

Boots
AMERICAN LAFRANCE CORP.
BEACON FALLS RUBBER FOOTWEAR
CAIRNS & BRO., INC.
BODY GUARD MFG. CO.
DARLEY & CO., W. S.
EUREKA FIRE HOSE DIV., U. S. RUBBER CO.
FYR-FYTER CO., THE
GOODRICH COMPANY, B. F.
INDUSTRIAL SAFETY SPECIALTIES CO. (Asbestos)
JANESVILLE APPAREL CO.
MINE SAFETY APPLIANCES COMPANY
SPERRY TOP-SIDERS
UNITED STATES RUBBER CO.

Clothing, Rubber & Canvas
AMERICAN LAFRANCE CORPORATION
BODY GUARD MFG. CO.
CAIRNS & BRO., INC.
DARLEY & CO., W. S.
EUREKA FIRE HOSE DIV., U. S. RUBBER CO.
FYR-FYTER CO., THE
GLOBE MANUFACTURING CO. (canvas)
GOODRICH COMPANY, B. F.
JANESVILLE APPAREL CO.
MIDWESTERN MFG. COMPANY
MORNING PRIDE MFG. CO.
RUSSELL UNIFORM CO.
WHEELER PROTECTIVE APPAREL, INC.

Hats and Caps—Uniform
BRUNSSEN CO., INC., GEORGE
CAIRNS AND BRO., INC.
DARLEY & CO., W. S.
EUREKA FIRE HOSE DIV., U. S. RUBBER CO.
FYR-FYTER CO., THE
REESE, S. H.
RUSSELL UNIFORM CO.
WENTWORTH-FORMAN CO., INC.

Helmets
AMERICAN LAFRANCE CORP.
BULLARD CO., E. D. (Fiberglas)
CAIRNS AND BRO., INC.
DARLEY & CO., W. S.
FYR-FYTER CO., THE
INDUSTRIAL SAFETY SPECIALTIES CO. (Asbestos)
MINE SAFETY APPLIANCES COMPANY
RUSSELL UNIFORM CO.
WHEELER PROTECTIVE APPAREL, INC.

Shirts, Uniform
CAIRNS AND BRO., INC.
DARLEY & CO., W. S.
RUSSELL UNIFORM CO.

WHERE TO BUY SECTION—*FOR ADDRESSES See last page of this section (p. 894)*

Suits
GLOBE MANUFACTURING CO.
RUSSELL UNIFORM CO.
WHEELER PROTECTIVE APPAREL, INC.

Suits, Quick Hitch
AMERICAN LAFRANCE CORP.
CAIRNS AND BRO., INC.
DARLEY & CO., W. S.

GLOBE MANUFACTURING CO.
JANESVILLE APPAREL CO.
MORNING PRIDE MFG. CO.

Uniforms
RUSSELL UNIFORM CO.

Woolen Socks and Mitts
CAIRNS & BRO., INC. (Gloves & Mittens)
MORNING PRIDE MFG. CO. (Mitts)

WETTING AGENTS
AMERICAN LAFRANCE CORPORATION
AQUADYNE CORPORATION
DARLEY & CO., W. S.
FYR-FYTER CO., THE
NATIONAL FOAM SYSTEM, INC.
ROCKWOOD SPRINKLER COMPANY
UNOX CO. DIV., McFARLAND MFG. CORP.

DIRECTORY OF MANUFACTURERS

Listed in WHERE TO BUY SECTION

For Advertisers in this issue see Advertising Index on p. 958

Asmo Protection Equipment Co., 215 Kalamazoo St., South Haven, Mich.
Akron Brass Mfg. Co., Inc., 1300 Spruce St., Wooster, Ohio
Allen Mfg. Co., W. D., 566 West Lake St., Chicago
Aluminum Ladder Co., Worthington Pa.
American Bosch Div., American Bosch Arma Corp., 3664 Main St., Springfield 7, Mass.
American District Telegraph Co., 155 Sixth Ave., New York 13, N. Y.
American Fire Apparatus Co., Main Street Rd., Battle Creek, Mich.
American Fire Equipment Co., 717 Boylston St., Boston 16, Mass.
American LaFrance Corp., 100 E. LaFrance St., Elmira, N. Y.
American-Marsh Pumps, Inc., Battle Creek, Mich.
American Rubber Mfg. Co., 1145 Park Ave., Oakland, Cal.
Ansul Chemical Co., 1 Stanton St., Marinette, Wis.
Approved Fire Equipment Co., Inc., Austin Blvd., at Audubon Island Park, L. I., N. Y.
Ardmore Products, 2040 Carroll Ave., Chicago 12, Ill.
Arguslite Co., Bliss Ridge Summit, Pa.
Army's Fire Service, Old Forge, N. Y.
Associated Fire Equipment Co., 1915 S. San Pedro St., Los Angeles 11, Calif.
Atlas Safety Equipment Co., Inc., 27 Warren St., New York 7, N. Y.
Attwood Brass Works, 303 Douglas Ave., Grand Rapids, Mich.
Audio Equipment Co., Inc., 805 Middlesex Rd., Great Neck, L. I., N. Y.
A & W Specialty Co., 3717 Midland Ave., Syracuse, N. Y.

Bar-Way Mfg. Co., 90 Canal St., Stamford, Conn.
Bonoco Falls Rubber Footwear Div., U. S. Rubber Co., Bonoco Falls, Conn.
Bean Div., John, Food Machinery and Chemical Corp., P. O. Box 540, Lansing 4, Mich.
Beck & Co., C. D., Sidney, Ohio
Bell-Phi Co., 17 Wyman St., Arlington 74, Mass.
Beto Fog Nozzle, Inc., 300 Wells St., Greenfield, Mass.
Bi-Lateral Fire Hose Co., 20 N. Wacker Dr., Chicago
Blackinton & Co., Inc., V. H., Attleboro Falls, Mass.
Blaze Guard Mfg. Co., North Bergen, N. J.
Blitz Buggy Co., Main St., Old Forge, N. Y.
Boardman Co., P. O. Box 1182, Oklahoma City, Okla.
Body-Guard Mfg. Co., 222 S. Fourth St., St. Joseph, Mo.
Bomgardner Mfg. Co., The, 1384 Hird Ave., Cleveland 7, Ohio
Boston Woven Hose & Rubber Co., P. O. Box 1071, Boston 5, Mass.
Braxmar Co., Inc., C. G., 210 E. 45th St., New York 17, N. Y.
Brooklyn Fibre Broom Co., Inc., 47 Dinsmore Pl., Brooklyn 8, N. Y.
Brumbaugh Body Co., West Plank Rd., Altoona, Pa.
Brunsco Company, Inc., George, 104-106 Bleecker St., New York 12, N. Y.
Buffalo Fire Appliance Corp., 221 Crane, Dayton 1, Ohio
Bullard Company, E. D., 275 Eighth St., San Francisco 3, Cal.

Cairns and Brother, Inc., 854 Bloomfield Ave., Allwood, Clifton, N. J.
Carpenter Mfg. Co., Master Light Building, Somerville 45, Mass.
C. D. Pike & Fire Hook Mfg. Corp., 367 Grange St., New Haven 10, Conn.
Champion Sprayer Co., 6553 Helntz Ave., Detroit 11, Mich.
Cheesebrough Mfg. Co., Cons'd. Professional Products Div., 17 State St., New York 4, N. Y.
Christopher Co., The, 65-70 Beaver St., New York 4, N. Y.
Circul-Air Corp., 575 E. Milwaukee Ave., Detroit 2, Mich.
City Pattern Shop, Inc., Box 6, Eastwood Station, Syracuse 6, N. Y.
Cornelius Company, The, 550—80th Ave., N. E., Minneapolis 21, Minn.
Cycle-Flo Co., 506 Bridgeport Ave., Milford, Conn.

Daniels, Inc., G. H., Daniels, Md.
Darley & Co., W. S., 2810 Washington Blvd., Chicago 12, Ill.
Decker Bros., 300 Lincoln Ave., Hawthorne, N. Y.
Delco-Remy Div., General Motors Corp., Anderson, Ind.
Delehanty Correspondence School, 115 East 13th St., New York, N. Y.
Detroit Diesel Engine Div., General Motors Corp., 13400 W. Outer Dr., Detroit, Mich.
Dual-Lite Co., 195 Front St., Bridgeport, Conn.
Du Mont Laboratories, Inc., Allen B., 780 Bloomfield Ave., Clifton, N. J.
Duo-Safety Ladder Corp., 600 9th St., Oshkosh 1, Wis.
Du Pont de Nemours & Co., Inc., E. I., Textile Fibers Dept., Wilmington 98, Del.

E & J Mfg. Co., 100 E. Graham Place, Burbank, Cal.
Eastman Co., Inc., Samuel, Carpenter St., Concord, N. H.
Electronic Protection, Inc., 432 W. Chicago Ave., Chicago 10, Ill.
Elkhart Brass Mfg. Co., Inc., 1302 W. Beardsley Ave., Elkhart, Ind.
Elleon Co., The, 30 Church St., New York, N. Y.
Emerson Co., J. H., 22 Cottage Park Ave., Cambridge 40, Mass.
Eureka Fire Hose Div., U. S. Rubber Co., 135 Hudson St., New York 13, N. Y.
Everson-Hose Co., Inc., 55 Chambers St., New York 7, N. Y.
Excelsior Brass Co., 3452 N. Knox Ave., Chicago 41, Ill.

Fabric Fire Hose Co., Sandy Hook, Conn.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Federal Sign & Signal Corp., 8702 S. State St., Chicago 19, Ill.
Fire Fighter Truck Co., 3148 Fifth Ave., Rock Island, Ill.
Fire Master Corp., 36100 Harper St., Mt. Clemens, Mich.
Foord & Co., F. C., P. O. Box 481, Bridgeport, Conn.
Fog Nozzle International, Wooster, Ohio
Fol-Da-Tank Co., Box 361, Rock Island, Ill.
Ford Motor Co., P. O. Box 556, Dearborn, Mich.
Four Wheel Drive Auto Co., Clintonville, Wis.
Fulton Bag & Cotton Mills, 10 Boulevard S. E., Atlanta, Ga.
Fyr-Fyter Co., The, 221 Crane St., Dayton 1, Ohio
Fyr-Larm Co., Inc., 241 Broad St., Summit, N. J.

Gamewell Co., Newton Upper Falls 64, Mass.
Garrison Mfg. Co., 1500 Santa Fe Ave., Los Angeles 21, Cal.
General Electric Co., Electronics Park, Syracuse, N. Y.
Gerstenslager Co., E., 1425 Bowman St., Wooster, Ohio
Globe Manufacturing Co., Pittsfield, N. H.
Gold Crest Safety Equipment Corp., P. O. Box 155, Dunellen, N. J.
Goodrich Company, B. F. (Industrial Products Div.), 500 S. Main St., Akron 18, Ohio
Gorman-Rupp Co., 305 S. Bowman St., Mansfield, Ohio
Grinnell Co., Inc., 260 W. Exchange St., Providence 1, R. I.

H & H Fire Apparatus, Inc., 725 Toonelo Ave., Jersey City 7, N. J.
Hale Fire Pump Co., Conshohocken, Pa.
Halprin Supply Co., 1255 S. Flower St., Los Angeles 15, Calif.
Hamilton Rubber Mfg. Corp., P. O. Box 351, Trenton 3, N. J.
Hannay & Son, Inc., Clifford B., Westerlo, N. Y.
Haredikes, Inc., North Dighton, Mass.
Hewitt-Robins, Inc., 666 Glenbrook Rd., Stamford, Conn.
Holloway & Assoc., 964 Stonewall St., Memphis, Tenn.
Homolite Corp., 360 Riverdale Ave., Port Chester, N. Y.
Howe Fire Apparatus Co., Anderson, Ind.

Industrial Radio Corp., 42 N. Parkside Ave., Chicago 44, Ill.
Industrial Safety Specialties Co., Eighth and Chestnut Sts., Perkasie, Pa.
International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Janesville Apparel Co., 218 N. Franklin St., Janesville, Wis.
Johnson Motors, 6200 Pershing Rd., Waukegan, Ill.
Kay-Hak Div., Producers & Distributors, Inc., 1321 Hanover Ave., Allentown, Pa.
Kechler Mfg. Co., 395 Lincoln St., Marlboro, Mass.
Kohler Co., Kohler, Wis.

Lane, E. B., 32 Greenwood Ave., Toledo 5, Ohio
Lasco-Neville Co., 6160 Hamilton Ave., Cleveland, Ohio

McDermott Corp., Julian A., 4022 National St., Corona, N. Y.
Maintire Brass Works, F. N., 377 Putnam Ave., Cambridge 39, Mass.
Mask Manufacturing Corp., Empire State Bldg., New York 1, N. Y.
Mass Edge Tool Co., P. O. Box 351, Lewistown, Pa.
Marine Products Co., 515 Lynnette, Detroit 14, Mich.
Marlow Pumps, Ridgewood, N. J.
Master Vibrator Co., 1782 Stanley Ave., Dayton 1, Ohio
Maxim Motor Co., Middleboro, Mass.
Memco Aerial Ladder Co., 1007 N. W. 36th St., Oklahoma City 16, Okla.
Midwestern Safety Mfg. Co., Mankinaw, Ill.
Miller Company, A. J., Bellefontaine, Ohio
Milwaukee Electric Tool Corp., 5354 West State St., Milwaukee 8, Wis.
Mine Safety Appliances Co., 201 North Braddock Ave., Pittsburgh 8, Pa.
Morning Pride Co., 1006 Home Ave., Dayton 3, Ohio
Motorola, Communications & Electronics, Inc., 4501 West Augusta Blvd., Chicago 51, Ill.
Mueller Co., 512 West Cerro Gordo St., Decatur, Ill.
Myers and Bro. Co., F. E., Orange and Fourth, Ashland, Ohio

Natale Machine and Tool Co., 339 State Highway No. 17, Carlstadt, N. J.
National Body Mfg. Co., Knightstown, Ind.
National Foam System, Inc., Union and Adams Sts., West Chester, Pa.
Nicarel Limited, Geo. T. Reynolds, U. S. Repr., P. O. Box 395, Thorwood, N. Y.
Nielsen-Rionda, Inc., 40 John St., New York 18, N. Y.

Oberdorfer Foundries, Inc., Syracuse 1, N. Y.
Onan and Sons, Inc., D. W., University Ave. & 29th St., S. E., Minneapolis 14, Minn.
Orsa Roanoke Corp., 1291-99 West Salem Ave., Roanoke 16, Va.
Overhead Door Corp., Hartford City, Ind.

Pacific Marine Supply Co., 1223 Western Ave., Seattle 1, Wash.
Pacific Reflex Signs, Box 323, McMinnville, Ore.
Pac-Kit Co., The, P. O. Box 1306, Greenwich, Conn.
Paroo Products Co., Pennsburgh, Pa.
Paris, Inc., Henry H., Distributor, 1123 Rothwell St., P. O. Box 952, Houston, Texas
Pioneer Gen-E-Motor Corp., 5841 W. Dickens Ave., Chicago 39, Ill.
Pirsch & Sons Co., Peter, 1308 35th St., Kenosha, Wis.
Portable Light Co., Inc., 210 William St., New York 38, N. Y.
Porter, Inc., H. K., 74 Foley St., Somerville 43, Mass.
Power Equipment Co., 6900 Paseo St., Kansas City, Mo.
Powhatan Brass & Iron Works, Ranson, W. Va.
Protectoseal Co., 1920 So. Western Ave., Chicago 8, Ill.
Pyle-National Co., The, 1334 N. Kostner Ave., Chicago 51, Ill.
Pyrene-C-O-Two, Newark 1, N. Y.

Quaker Rubber Corp., Fire Hose Div., Comly and Tacony Sts., Philadelphia 24, Penn.
Quaker Pioneer Rubber Mills, Div. Porter Co., Inc., H. K., San Francisco 7, Cal.

Radio Apparatus Corp., 7900 Pendleton Pike, Indianapolis, Ind.
Randolph Laboratories, Inc., 8 E. Kinzie St., Chicago 11, Ill.
Red Comet, Inc., 238 E. Main St., Littleton, Colo.
Reese, S. H., 57 Warren St., New York, N. Y.
Republic Rubber Div., Lee Rubber & Tire Corp., Albert St., Youngstown 1, Ohio
Rockwood Sprinkler Co., 38 Harlow St., Worcester 4, Mass.
Russell Uniform Co., 192 Lexington Ave., New York 16, N. Y.

Safe Alarm Div., The Fyr-Fyter Co., 243 West Market St., Orrville, Ohio
Safer Electronic Fire Alarm Co., Inc., 836 River Road, Edgewater, N. J.
Scott Aviation Corp., 207 Erie St., Lancaster, N. Y.
Seaberg & Assoc., Carl M., Cons. Engrs., 1529-15th Ave., Moline, Ill.
Seagrave Corp., 2000 S. High St., Columbus 7, Ohio
Sharpsville Steel Fabricators, Inc., 6th & Main Sts., Sharpsville, Pa.
Sirene Co., Inc., 214 Williams St., New York 38, N. Y.
Smith and Co., D. B., 406 Main St., Utica 2, N. Y.
Solar Aircraft Co., 2200 Pacific Hwy., San Diego, Calif.
Sonotone Corp., Battery Div., Saw Mill River Rd., Elmsford, N. Y.
Sperry Top-Siders, Bonoco Falls, Conn.
S-T Hydrant Wrench Co., P. O. Box 921, Holyoke, Mass.
Stephenson Corp., Red Bank, N. J.
Sterling Siren Fire Alarm Co., Inc., 8 Bartlett St., Rochester 8, N. Y.
Superior Coach Corp., Lima, Ohio
Superior Signal Co., 8 Colfax St., South River, N. J.
Super Vacuum Manufacturing Co. 3191½ E. 17th Ave., Denver 5, Colo.

Thermoid Company, 200 Whitehead Rd., Trenton, N. J.
Timmins Splint Co., 2126 Cuming St., Omaha 2, Nebr.
Trippe Manufacturing Co., 218 N. Jefferson St., Chicago 6 Ill.

U-C Lite Mfg. Co., 1050 West Hubbard St., Chicago 22, Ill.
U. S. Motors Corp., 1420 Nebraska St., Oshkosh, Wis.
United States Rubber Co., Rockefeller Center, New York, N. Y.
Universal Fire Apparatus Corp., P. O. Box 187, Logansport, Ind.
Unox Co., The, Div. of McFarland Mfg. Corp., 1000 Roberts St., Houston 3, Tex.

Von Duprin Div., Vonnegut Hardware Co., 402 W. Maryland St., Indianapolis 9, Ind.

Ward LaFrance Truck Corp., Grand Central Ave., Elmira, N. Y.
Washington Products Co., Box 105, Washington Court House, Ohio
Waterous Co., 31 E. Fillmore Ave., St. Paul 1, Minn.
Waukesha Motor Co., St. Paul Ave., Waukesha, Wis.
W-B Manufacturing Co., 137 No. Wase St., Wichita, Kans.
Wendell-Northwestern, Inc., 329 Marquette Ave., Minneapolis 1, Minn.
Wentworth-Forman Co., Inc., 21 Edinboro St., Boston 11, Mass.
Werner Co., Inc., R. D., 295 Fifth Ave., N. Y., N. Y.
Wheeler Protective Apparel, Inc., 224 W. Huron St., Chicago 10, Ill.
Wooster Brass Div., The Fyr-Fyter Co., 1415 E. Bowman St., Wooster, Ohio

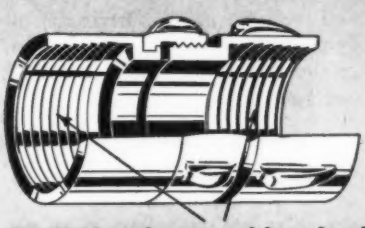
Young Fire Equipment Corp., 1548 William St., Buffalo 8, N. Y.

LIGHTWEIGHT
FORGEX couplings
for LIGHTWEIGHT
synthetic-fibre hose
Make Sense!

FORGEX®

The lighter, tougher
DROP-FORGED COUPLING

More and more fire companies specify FORGEX with every order of lightweight, synthetic fibre fire hose. Independent laboratory tests PROVE Forgex couplings up to 100% stronger than other couplings . . . yet they weigh only half as much. Drop forging's the secret . . . combines lightness with super toughness. Tested on hose to over 1500 pounds, independent laboratory tests proved that "the hose will blow before FORGEX will go." All brass, non-corrosive, cost no more than ordinary couplings.



FORGEX has the tapered hose bowl that grips the hose forever.

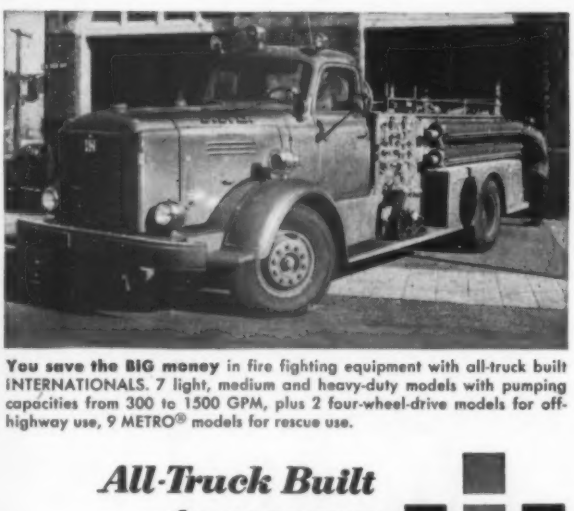
SPECIFY FORGEX®

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. CO., INC. • WOOST[illegible] OHIO

1,400 crash landings a minute...

Here's a beating your truck will never have to take. This INTERNATIONAL Truck is pounding over the Belgian Block course . . . a torture track so bumpy that, at only 12 miles per hour, it slams wheels up and down 1,400 times a minute—so rugged that drivers are replaced every 20 miles of the 400-mile test.



You save the BIG money in fire fighting equipment with all-truck built INTERNATIONALS. 7 light, medium and heavy-duty models with pumping capacities from 300 to 1500 GPM, plus 2 four-wheel-drive models for off-highway use, 9 METRO® models for rescue use.

to save you the BIG money

We torture INTERNATIONAL Trucks this way to be sure that sheet metal, cabs, springs and all running parts will stand up *longer*. So that our trucks will have utmost roadability, minimum wheel fight, maximum comfort. It's all a part of INTERNATIONAL engineering and design to save you the BIG money — the operating and upkeep money.

INTERNATIONAL engineers are never called upon to adapt passenger car engines or components. They design INTERNATIONALS with extra margins of strength—build them to save you the BIG money in the long run.

Yet with all this all-truck extra value, INTERNATIONALS are competitively priced. Let your INTERNATIONAL Dealer or Branch show you the right INTERNATIONAL for you — *all-truck built to save you the BIG money!*

INTERNATIONAL HARVESTER COMPANY • CHICAGO

All-Truck Built to save you the BIG money!

Top TV Comedy! Ronald Colman and Benita Hume in "The Halls of Ivy," CBS-TV. See your paper for date, time and channel.

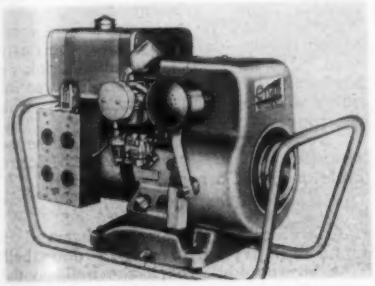
INTERNATIONAL® TRUCKS

International Harvester Builds McCORMICK® Farm Equipment and FARMALL® Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

News of the Manufacturers

New Line of Portable Electric Generators

A new line of portable electric generating plants, specifically designed for Fire Department use, has recently been announced by D. W. Onan & Sons Inc., Minneapolis, Minnesota.



New Onan portable power plant for fire departments.

Ranging in size from 750 to 2500 watts A.C., these low-cost, single cylinder electric plants provide reliable, on-the-spot electric power for fire-fighting and rescue work, floodlights, tools and public address systems.

Completely Onan-built, these portable plants are compact, quick to start and simple to operate.

They lend themselves to either type of normal fire rig installation . . . mounted on the running board or permanently mounted in a compartment on the vehicle.

Basic models of these new units are equipped with pilot light, grounding stud and 4-receptacle outlet box for multiple use of motor-driven equipment. Important accessories, including quick-release mounting brackets, recoil starters and carrying frames, make these portable generators more versatile than ever.

Beck Acquires Ahrens-Fox

C. D. Beck & Company, Inc., of Sidney, Ohio, who have been building Ahrens-Fox fire apparatus under contract for the past two years, has now acquired the Ahrens-Fox name, and in the future will produce Ahrens-Fox pumpers, both commercial and custom.

The Beck organization have been a builders of inter-city buses for more than 25 years, and is widely known in that field.

New Ward LaFrance Representatives

The appointment of four new representatives to handle Ward LaFrance fire apparatus has been announced by Brook J. March, sales manager for the Ward LaFrance Truck Corporation, Elmira, N. Y.

Russell A. Alber of the Alber Fire Protection Company, 211 North Seventh Street, St. Louis, Missouri, will cover the state of Missouri and southwestern Illinois. Northeastern Ohio and the Cleveland metropolitan area will be serviced by the Stanley R. Smith Company, of 1200 West Ninth Street, Cleveland, Ohio. The majority of Michigan and the Detroit area will be handled by Robert M. Rahaley, of 3900 Grandy Avenue, Detroit 7, Michigan. The states of Louisiana and Mississippi, also parts of Texas and Arkansas will be covered by William B. Moore Fire Apparatus and Equipment Company, P. O. Box 294, Baton Rouge, Louisiana.

Wallace Heads Fyr-Fyter Division

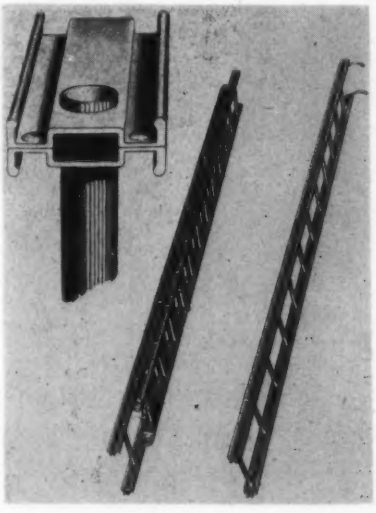
The Fyr-Fyter Company, Dayton, Ohio, has appointed M. W. Wallace Vice President and General Manager of its SAFA Alarm Division, specialists in Municipal and Industrial fire alarm systems and related equipment. Mr. Wallace, prior to his new appointment, was sales manager of Commercial Credit Corporation, New York City. Other appointments approved by the Board of Directors of Fyr-Fyter, and which also became effective June 20th, include: W. T. McCane, Sales Manager, SAFA Alarm Division; M. D. Hudson, Assistant Vice President In Charge of Manufacturing, Safa Alarm Division; and D. O. Hudson, Assistant Secretary and Assistant Treasurer and Comptroller, Safa Alarm Division. Fyr-Fyter's SAFA Alarm Division is located at Orrville, Ohio.

New Ladders for Pumpers

New pumper extension and pumper roof ladders, shown herewith, feature heavy aluminum channel side rails and 1-inch corrugated aluminum rungs which are permanently attached to the double channel side rails with expansion bushing construction.

These ladders are designed to replace obsolete ladders or as new ladders on short wheelbase pumper trucks. They fit most brackets designed for wood ladders. The nested thickness of these two ladders is only 6⅞". Roof Ladders are supplied with folding steel hooks.

They are products of the Aluminum Ladder Co., Worthington, Pa.



New pumper extension and roof ladders.

New Strainer to Relieve Suction Clogging and "Whirlpool"

The old headaches of clogged suction hose intakes and pumping of sand, gravel and foreign matter, together with whirlpool action and subsequent loss of suction and prime, may be on the way out, according to manufacturers of "Float-Dock" Dual-Use Strainers.

The device consists of two units, a float tank, which permits the strainer to draft just below the surface where water is cleanest, and the strainer, which may be quickly detached for drafting from vertical sources such as cisterns. The strainer is hinged to the float, permitting it to ride level at all times in quiet or rough water regardless of hose weight or inclination.

Fol-Da-Tank Suction Strainer

This device is reportedly giving extreme satisfaction to rural fire fighters, where shallow drafting may possibly cause not only clogging of suction, but damage to impellers, bearings and packing.

The appliance is fabricated of heavy, cadmium-plated steel with brass hose coupling. It is furnished in stock coupling sizes of 2½-inch, 4-inch and 4½-inch (N.S. threads), but can be made any size or thread on order.

Complete information is available from the Fol-Da-Tank Co., Box 361, Rock Island, Ill.

American LaFrance Issues New Foamite Booklet

American LaFrance Corporation, Elmira, N. Y., has published a new 36-page booklet entitled "Foamite Airfoam" containing engineering data and other useful facts about Foamite Airfoam fixed fire protection systems, portable and semi-portable equipment.

This literature is available upon request to those who have need of this type of fire protection.

Tyler to Head Sales for Overhead Door Corporation

Richard D. Tyler, associated with General Electric in various sales executive capacities for a number of years, has been appointed General Sales Manager of Overhead Door Corporation, Hartford City, Ind., according to announcement by Paul W. McKee, president.

Mr. Tyler will be responsible for all sales, sales promotion and distribution of the "Overhead Door" for commercial, industrial and residential application.

(*Continued on page* 956)

FALSE ALARMS

Persistency

One of our sales reps called on a big prospective buyer at the close of a busy day. When our boy had been admitted, the big prospect said: "You should feel highly honored, young man. Do you know that today I have refused to see seven salesmen in your line of business?"

"I know," said the sales rep. "I'm them!"

* * *

Misplaced

An inebriate had just been firmly but quietly ushered out of a refreshment emporium. He wobbled uncertainly across the street to the edge of a small lake. Swaying back and forth, he looked intently down into the water, until an officer came up and demanded to know what he was doing.

"Jush lookin' at shumpin' in th' lake, osshifer."

"Well, just what are you looking at?"

"I dunno, what is't, osshifer? Please tell me."

The officer looked at the lake and said, "It's the moon, you fool!"

For awhile the stricken inebriate was silent in perplexed and serious meditation. Finally he said, "Thash funny. If tha's the moon down there, what'n hell am I doin' up here?"

* * *

Bus Driver's Wife: "Is this the office of the Fidelity Insurance Company?"

Switchboard Operator: "Yes, madam, to whom do you wish to speak?"

Bus Driver's Wife: "Well, I want to have my husband's fidelity insured, just connect me with the proper party who handles such affairs."

* * *

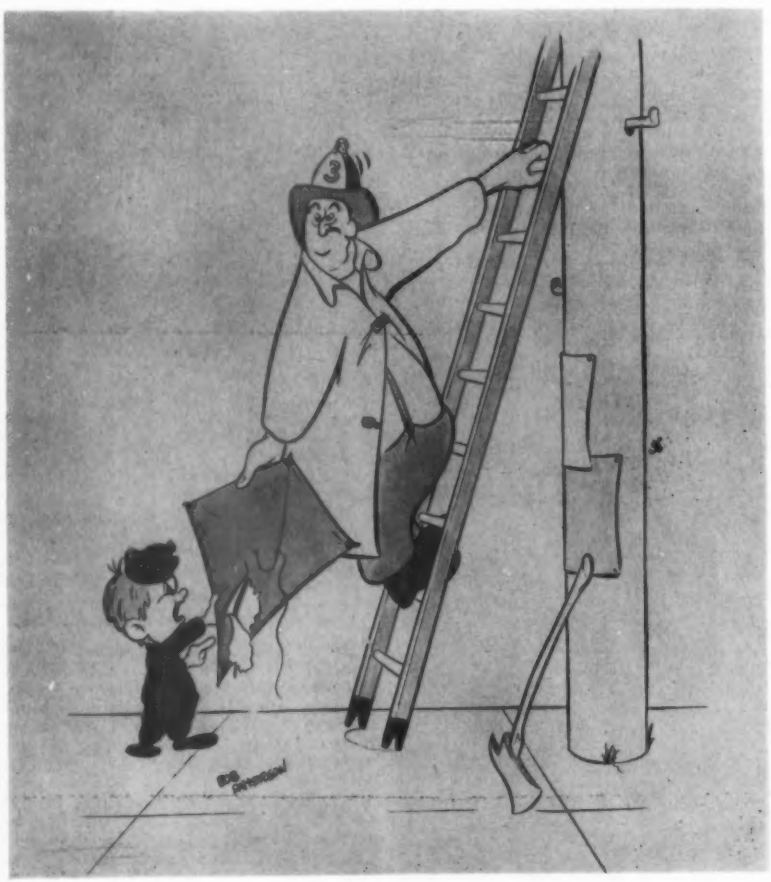
The Test

Don't boast of being a brave and fearless man until you have felt your way through a dark room at 2 a.m. to investigate a strange noise—and have had a broom handle fall against the middle of your back.

* * *

"But why do you want an autopsy made on your body when you die?" asked a lawyer, making out O'Flaherty's will.

"So that I'll know what killed me, of course."



"A little careless with the taxpayer's money, ain't you?"

Confusion

Everybody seems to be confused these days—we don't know whether we are coming or going. Which reminds me of a story they are telling down in Orlando, Fla., about a darkey who was walking down a country lane.

In his hand he held an 8-foot rope, which he was dragging along the dusty road. He had a very troubled look on his face, which caused a neighbor to inquire what on earth he was doing with the rope.

"Boss," replied Uncle Joe, "I'se so confused. I don't know whether I lost a mule or found a rope."

* * *

An elderly gentleman observed a small boy trying to ring a door bell. The boy couldn't reach the bell, so the kindly old man rang it for him. He asked the boy what he was going to do next. And the kid replied, "I'm going to run like blazes, mister, what are you going to do?"

* * *

And then there was the little moron who sat down and cried and cried because her husband had gone out to shoot craps and she did not know how to cook them.

* * *

A new invention has hit the market—a United Nations pen which writes under protest.

* * *

A man can sometimes get a pearl out of an oyster, but it takes a pretty girl to get a diamond out of an old crab.

* * *

The best flings in life aren't free.

* * *

Watching the ads on matchbook covers in your husband's pockets is a lot cheaper than hiring a detective.

* * *

"How'dja get the black eye?"

"That's a birth mark."

"Wadda you mean—birth mark?"

"By mistake I tried to get into the wrong berth on the Limited last night.

* * *

Thought for the day: It won't do any good to spank a girl after she's sixteen, but it sure is a lot of fun.

* * *

Diagnosed

The little girl was visiting her aunt. It was the first time she had been away from home and after the first two days the novelty had worn off and she began to cry.

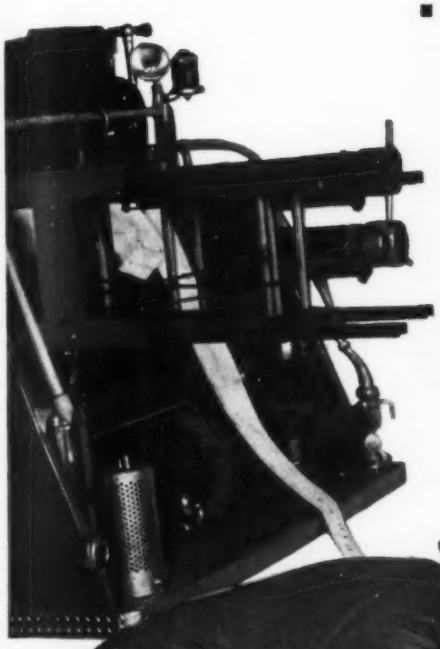
"You aren't homesick, are you?" her aunt chided gently.

"No," was the tearful response, "I'm heresick."

* * *

All attempts to unionize big league baseball players have failed. Probably because ball players never want to be called out on strikes.

Up to 10 lbs. lighter per 50-ft. length ...with DACRON filler cords.



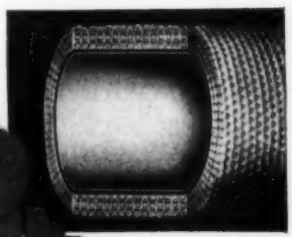
--EUREKA Multiple-Woven

Hosemen appreciate the *lighter weight, greater strength* and *safety* of Eureka Multiple-Woven Hose when made with circular (filler) cords of Dacron*. They like, too, the ease with which it rolls into coils or bends back on itself . . . the speed with which it dries.

Those entrusted with the buying of fire equipment also favor Eureka Multiple-Woven. Experience has proved it least expensive in the long run, despite its premium quality and initial cost. Users report up to 25 years' useful service life from this unique hose that is woven on special, never-duplicated Eureka looms.

On every count—quality, economy, safety and performance—*your* choice of hose is beyond criticism when you make it Eureka Multiple-Woven! You'll also have the added satisfaction of buying your hose from a fire hose specialist.

*Du Pont's trade-mark for its polyester fiber.



All plies are woven *and interwoven* simultaneously. There's no space between plies for water and dirt.

"For greater protection to life and property"

EUREKA FIRE HOSE

Since 1875, Specialists in Manufacturing Circular-Woven Rubber-Lined Fire Hose

195 Hudson Street • New York 13, New York

Division of United States Rubber Company

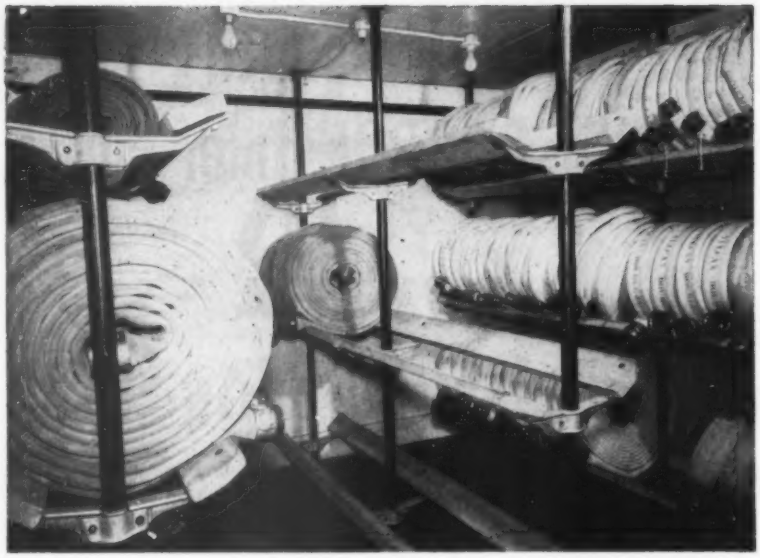
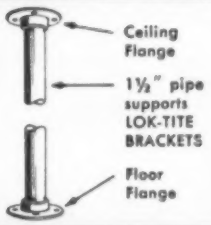


Photo Courtesy Wichita Fire Station No. 1

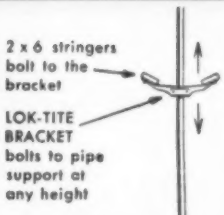
The Solution to Hose Storage Problems

FEATURES

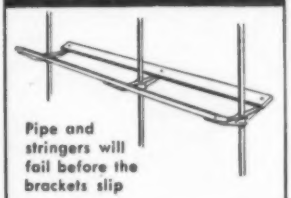
SIMPLE INSTALLATION



EASY ADJUSTMENT



BIG LOAD SUPPORT



Pipe and stringers will fail before the brackets slip

Build Your Own Racks With Lok-Tite Brackets

MIGHTY few station houses have all the room they need for good housekeeping. Lok-Tite brackets help solve the hose storage problem by allowing ample ventilation and access in limited storage space.

Build your own racks with new or used materials. Design your own storage to take full advantage of the space available. Have ample room for fittings inspection and ventilation.

Lok-Tite brackets, light weight aluminum alloy, designed for strength and easy installation.

$3.65 F.O.B. Wichita

W-B MANUFACTURING COMPANY

157 NORTH WACO STREET **WICHITA, KANSAS**

Arson Seminar

(*Continued from page* 865)

ing material; that they were started from a faulty stove or heater; or they got under way as the result of misuse of electricity, such as amateur wiring, overfusing or forgetting to turn off the electric iron," he said.

Several conference speakers, in addition to Chief Clough, called attention to the growing percentage of incendiary fires that are being set by juveniles throughout the country. Fire Marshal Clough blamed the increase on "parental delinquency" and recommended that parents of juveniles who commit arson be jailed for contributing to the delinquency of minors. More than 60 per cent of all intentional fires are set by juveniles, he said.

"Eighty per cent of all intentional fires are purposeless," said Chief Clough, "having no motive of fraud, revenue or concealment of another crime."

"People responsible for these fires are pyromaniacs, morons, persons with nervous disorders, alcoholics, thrill seekers and juveniles."

Also speaking on the juvenile problem, Fire Marshal W. G. Burns of Dallas, Texas, said that 374 children were involved in setting fires in his city last year and that these blazes cost $600,000 in property losses.

"And it may surprise you to learn that these children who are setting fires are not children from the slums, but are children from the finest sections of Dallas."

Chief Burns listed five causes for children becoming involved in committing arson: broken homes, a lack of confidence in parents, bad company, idleness and a lack of proper training.

Dr. Lester Adelson, Cleveland, Ohio, pathologist and coroner, said that as far as the coroner is concerned, bodies recovered from a fire can tell a story all their own. Sometimes, even though the bodies are unrecognizable with burned hands making fingerprinting impossible, there are certain things which can be proved from proper autopsy.

"Sometimes we find out that a person was dead before the fire," said Dr. Adelson. "In many cases death may be the cause of a fire. A man may suffer a fatal heart attack while smoking. Or he may be electrocuted and the fire may start after his death.

"An individual may desire to commit suicide and start the fire ahead of time to cover up the evidence. He may say, 'I don't want the world to know, since suicide carries a stigma.' Or he may say, 'Since I'm going away, my wife might as well collect double indemnity.'".

PAUL DITZEL

Bishop Sawmill Razed by Fire

Careless use of an acetylene torch caused a $100,000 blaze which destroyed the Inyo Lumber Company sawmill near Bishop, Calif., on May 28.

Aside from the fire damage, 130 workmen at the plant were idled. Manager Bill Moffett said the fire started from an acetylene torch in the hands of workers who were making repairs to the mill.

The blaze spread rapidly and volunteer firemen from Bishop were able to prevent the fire from spreading to other lumberyard installations.

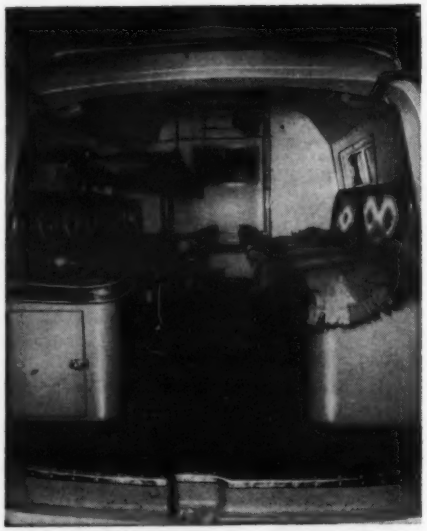
PAUL DITZEL

The New Revolutionary

for SEP

The New Revolutionary

FIRE FIGHTER + AMBULANCE + RESCUE + POLICE PATROL all in one



Interior view with capacity for (4) stretcher patients. When not in use the folding stretchers are stored behind the hinged lazy-backs. There is sufficient compartment space in the interior for several lengths of fire hose. Also shown in interior are: medicine cabinet, combination attendant's seat and storage compartment, heater, fan and foam rubber cushions with high quality leatherette.

This patented multipurpose DISASTER vehicle is custom built on a GMC chassis having a GVW of 8,800#.

Assembled and serviced by FRUEHAUF TRAILER CO.

This light, fast unit, manned by one or two men, will respond to all DISASTER calls!

Carries 150-200 gallons of water! Generates 6,000 gallons of foam! Capacity: four stretcher patients! Accommodates 12 men!

Complete with 200 G.P.M. pump, first-aid and rescue equipment!

¾ view driver's side with fire fighting equipment cleverly concealed from view to preserve its sleek ambulance construction. *Note*: In picture below same view show side panel and suction hose housing (under running board) open. These two compartments are available on curb side as well, making possible suction and discharge from either side of vehicle. The patented roof design affords the needed headroom lacking in all other ambulances. The dome is equipped with two chrome flashers and a centrally located "cruiser" vent.

Curb side view with side door open showing compartment space for: portable generator, cot for ambulance, oxygen equipment and gas masks. Additional space in cab for: oxy-acetylene equipment, flood lights, fire hose and other emergency equipment. Note also closed compartments for valves and suction hose under running board.

Driver's side view with fire fighting valves and suction hose housing. These compartments are shown in open position.

Rear view with diamond plate rear step and chrome hand railing. Panel between step and floor contains 250' high pressure chemical hose on booster reel.

Developed, Engineered and Sold By . . .

THE CHRISTOPHER COMPANY
66-70 BEAVER STREET NEW YORK 4, N. Y.

Gentlemen: Please mail me further data on your disaster unit.
NAME ..... *(Use margin for address)*
TITLE .....

World Wide Fire News

By Roi B. Woolley

"Nike" Sites Claimed Safe

The Army has assured cities that the "Nike" sites being put in their "backyards" as part of a $1 billion guided missile program, will be "safe as a gas station."

As it gave this pledge it revealed the tremendous size of the anti-aircraft missile project to newsmen touring a combat-ready "Nike" site at Lorton, Va.

This emplacement, similar to other such missile defense installations, houses 109 officers and men ready on short notice to release eight Nikes. The installations, which require from 50 to 150 acres for a battery of 12, have caused considerable concern among citizens in areas where they are installed. It is recalled that one such missile fired accidentally last spring at Fort Meade, Md., created near-panic in the area but fortunately there was no fire and no fatalities.

* * *

Chlorine Gas Sweeps Red Zone

A pipeline carrying deadly chlorine gas ruptured on July 2 last in Heringten, near Hersfeld, Germany. Fifty persons were stricken before a breeze blew the suffocating fumes across the East-West German border into the Soviet Zone.

Hours later, police said the greenish-yellow gas from a commercial chemical company was slowly fading away. But while it lasted, there was plenty of action on both sides of the border.

The cloud of chlorine, accidentally released, swept toward the West German border towns of Widdershausen and Seimbach and their 1,700 residents were ordered to flee to high ground. The nearby Wintershall potash mines ordered its men out of the pits to safety to avoid the gas, which is heavier than air, and hugs the ground. Then the gas drifted across the border on a brisk breeze. But not before West German authorities telephoned Communist police warning them of the approaching danger.

The pipeline that broke ran from a railroad tank car to a chlorine gas container inside a plant making commercial chemicals. Although police reported none of the 50 persons stricken was in serious danger, "everybody who got the slightest bit or was even coughing, was hospitalized as a precautionary measure."

* * *

Five Men Die in Diesels Crash

Five railroad men were killed July 5, 1955, when two Santa Fe railroad freight trains crashed head-on and burned in a spray of fuel oil near Vaughn, New Mexico.

The two trains were reportedly traveling about 20 miles an hour near Cadence, 25 miles east of Vaughn. One train, headed west, apparently pulled from a siding onto the main line and into the path of an east-bound train.

The impact of a the crash caused a tank car to buckle. The flammable mixture made a pyre of the wreckage, in which the victims were trapped.

The fuel-soaked Diesel units of both trains blazed up and burned for more than eight hours. An ambulance driver from Clovis N. M., who was called to the scene with the fire rigs, said, "It was terrible. We couldn't get near the cabs, because of the flames, for five or six hours."

The dead included the engineer, fireman and head brakeman of the westbound freight and the engineer and head-brakeman of the east-bound train. The fireman of that train miraculously escaped death. He was in the rear of the Diesel and the collision forced the car to buckle open, leaving him an escape exit.

* * *

Firemen Assailed in Death of Boy

Once again the question of the responsibility of a fire department for fighting fire and saving life—or attempting to do so—outside the political subdivision which the department serves is in the news.

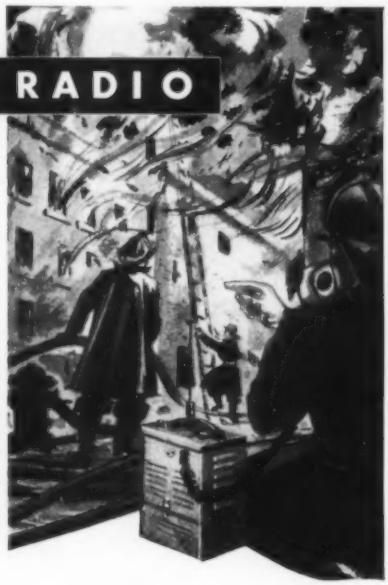
The latest report comes from Aurora, Ill., where the fire department was blamed by the mother of a four-year-old boy for reportedly failing to do all that it could to save the youngster.

The mother, who was visiting a neighbor when the fire occurred in which her child Ricky was killed, claimed that the fire department came too late—only after the third call.

Fire Chief Pat Hannon said the Sherman home was outside the city limits and the department was not obliged to respond. He pointed out that the department waives the legalities when a human life is involved, but that his or-

INDUSTRIAL RADIO

2-WAY RADIO

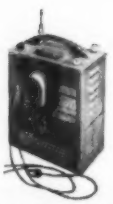


Smaller, Lighter, More Powerful Equipment for all Fire Department Radio Communications

Actual demonstrations prove that pound-for-pound and size-for-size, PAK-FONES offer more reliable communications than other equipment made for fire department use. Many village radio systems are composed entirely of PAK-FONES. This superior performance is the result of the latest Heimark design and efficient circuits.

UNIVERSAL PORTABLE UNIT

The Model A PAK-FONE has self-contained batteries, may be operated from a storage battery in a vehicle, or plugged into 117 VAC house circuit. Built-in power supply and loudspeaker.



FOR THE CHIEF

A personal 2-way radio, no larger than a camera. With it, the chief can direct operations from within a burning building. Unit is protected by a heavy leather case. Waterproof handset. FIELD-FONE Model FF.

Vehicle and Base Station PAK-FONE

The Model J is the smallest complete 2-way radio for vehicle or base station use. It measures only 10" W x 9" D x 5" H. Operates from 6, 12, 24 volt systems and 117 volts A.C. Built-in loudspeaker and power supply. Minimum installation. Can be removed from vehicle in less than 1 minute.

WRITE FOR COMPLETE INFORMATION AND LITERATURE

ir INDUSTRIAL RADIO CORP. 428 N. Parkside Ave. Chicago 44, Ill.

FOR FIREFIGHTING OR BOOSTER SERVICE the highly portable, light-weight Marlow Fire Pump can be quickly moved to a fire or water source that a pumper can't reach. For fire-fighting, the unit boosts hydrant pressure or pumps from any pond, or shallow well. Small departments can dispatch it to dreaded second fires. For booster service the pump can be carried by two men to inaccessible water sources. The pump pushes water up hills or over long distances to supply pumpers or tank trucks.

marlows are portable

The Marlow Fire Pump, weighing only 160 pounds ready to operate, *can be placed in service 30 seconds after starting!* Powered with an 8½ hp. engine, the unit runs unattended and delivers up to 100 g.p.m. at 80 p.s.i. It can be stored in pumper compartments or car trunks. Meets recommendations of National Fire Protection Association and performance exceeds minimum requirements. For details, see your Marlow dealer or write for Bulletin F-04.

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY

DIVISION OF BELL & GOSSETT COMPANY • *Branch Factories: Longview, Texas • Morton Grove, Illinois*

ganization was not told until the third appeal that a child was in the burning home.

* * *

Mine 'Squeeze' Damages Pa. Homes

In June, two dwellings in the Pittston, Pa., area were damaged severely and plaster cracked in other homes in a four-block area when a mine 'squeeze' started, at Forty Fort, south of the city.

The shifting of earth caused streets and sidewalks to buckle; gas mains were broken, and telephone lines ripped away. The power company began shutting off electric service in the affected area to prevent fires.

Firemen went from house to house warning residents to disconnect oil burners and to guard against fire.

Fresh from the World News Ticker

It was announced late in July that the U. S. Army will formally turn over $41,000 worth of fire fighting equipment to the City of Seoul, Korea. Severfully equipped fire trucks, which were bought for Korea with American aid funds, are included. The Eighth Army at one time operated eight fire stations in the capital city. . . . Firemen on August 3 doused a week-long fire in the coal bunkers of the British freighter Argovan, at Muroran, Japan. . . . The building-by-building fire prevention drive started by New York's Fire Commissioner Edward Cavanagh, Jr., has not only cut down the number of fires, it is reported, but has enriched the city by more than $300,000. Seems that while the Brothers were inspecting, they turned up thousands of water coolers and other commercial refrigeration devices for which no Fire Department permit fees had been paid. . . . Nine thousand refugees from Communist North Viet Nam have been made homeless in fires set by unknown persons, it was reported August 3. . . . The Fireman's Ball at Lang Warrin, Victoria, Australia, was not exactly a success this year. Six hours after the ball the weary firemen rushed back to the hall where it was held—this time on business. Somebody had been careless with a cig' butt. The hall burned to the ground. . . . Seven of the twelve children in a Hull, Quebec, family burned to death on July 24, when they were trapped in the second story of their frame home. The parents "were visiting outside the city for the night." . . . In another Quebec Province tragedy a mother and five of her seven children died July 12 in an early morning fire that swept their frame home in St. Simeon de Charlevoix. The woman and her children were trapped on the second floor; two sons and two visitors jumped to safety. . . . Fire broke out in the engine room of the Danish submarine Saelen July 26, last, trapping a number of men inside. Cause of the fire in the submarine which was in the Copenhagen, Denmark, Navy dockyard, was not determined.

Second Gas Blaze Set

Smoke Fells 23 Firemen

2 Extra-Alarm Fires In City; 16 Are Felled

When THIS Happens Are You Prepared?

STEPHENSON RESUSCITATOR

Used in cases of respiratory emergency will save many lives.

QUICK DEPENDABLE SAFE

This easy to operate protection is a 'must' for cases of smoke suffocation, gas poisoning, heart attack, electric shock.

Hundreds of departments know from experience that Stephenson Resuscitators are the most effective and do most for the victim.

Write today for demonstration without obligation or for pamphlet F-207

Be sure to visit our booth at Omaha!

STEPHENSON CORPORATION

RED BANK NEW JERSEY

Represented in Canada by **WILSON & COUSINS, Toronto**

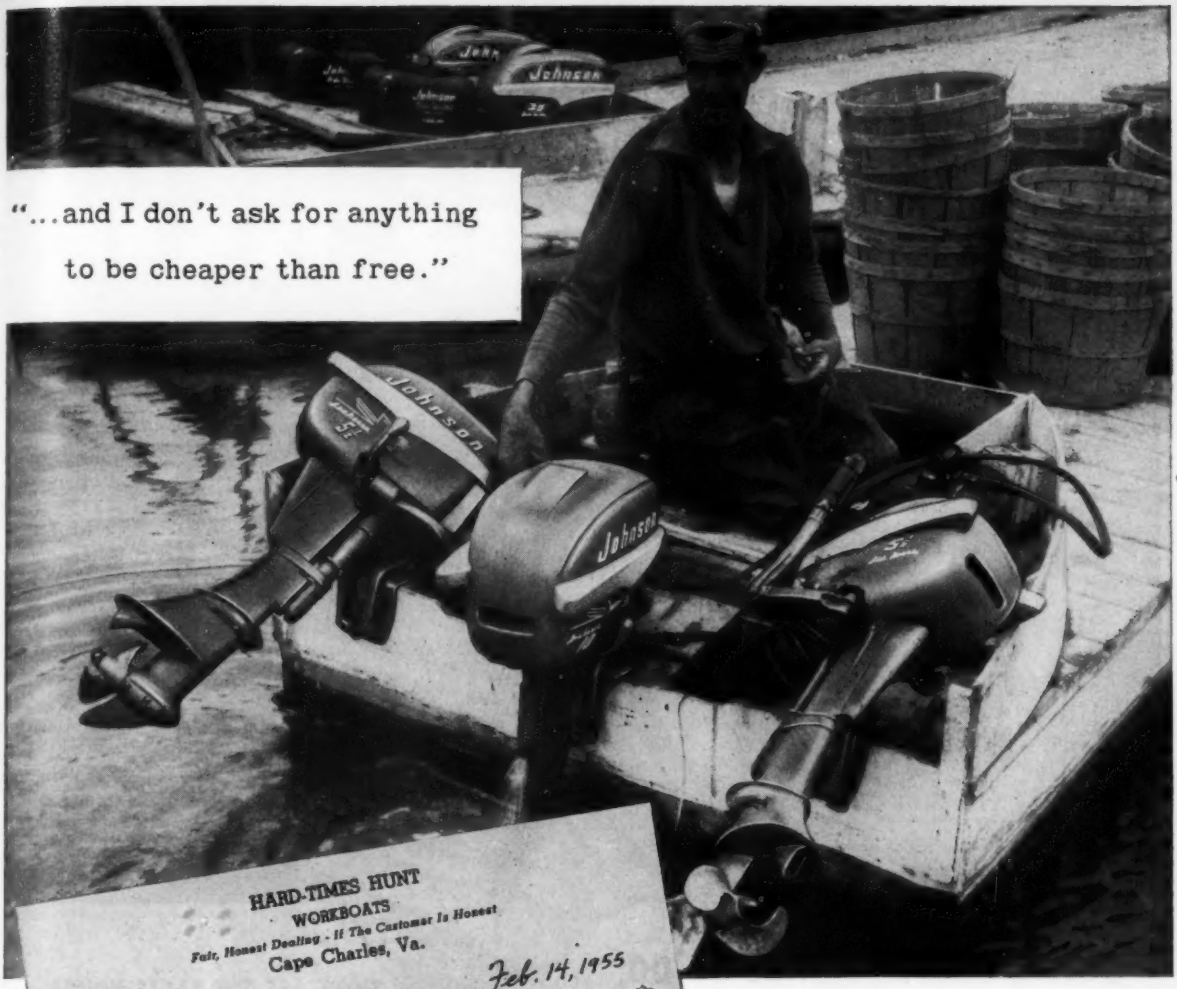
Air Force Base Host to Firemen

Hamilton Air Force Base Fire Department, Hamilton, Calif., was host to visiting firemen on Wednesday, May 25, 1955, the occasion being the monthly meeting of the Sonoma County Firemen's Association.

Demonstrations and instructions were given at eight o'clock at the drill area, utilizing the type of equipment the local departments would use to work with in event an aircraft was down in their area, water fog. This was followed by a demonstration using the Air Force types 0-10 and 0-11A equipment. Chief W. H. Taft of the Base explained the type of equipment used and the effect of water fog on flammable liquids.

At nine o'clock the meeting reconvened at the Main Fire Station and a critique was held on the demonstration, during which time many questions were answered. The meeting was then turned over to the president of the association (Chief Burt Chadwick) and secretary (Dr. E. W. Rodgers). A motion was made to dispense with the business of the association and the Hamilton Air Force Base Fire Department was asked to continue with the instructions to be used when an aircraft was down in their area.

Chief Taft then introduced Asst. Chiefs D. E. Basile, Samuel J. Blumenberg, and Keefer A. Pattan of the Hamilton Air Force Base Fire Department. The meeting was then turned over to Chief Pattan who gave data and demonstrations on release and ejection of canopies, ejection seats, proper procedure with which to approach a burning aircraft, precautions and protection to be used by firemen, precautions to use when aircraft is down in a heavily populated area, near hospitals, schools, etc., emergency entrance into aircraft, preservation of evidence and hazards involving armament. A fifteen minute critique was held at the end of the instructions, conducted by Chief Taft and Chief Pattan.



Gentlemen:

Johnson outboards don't need testimonials but I'd like to tell you of my experience with them:

Several years ago, I was using a tow-boat, with 100 h.p. inboard, for moving scows, monitors and the various types of cargo lighters we use for taking and delivering oysters and shells locally. This boat cost about $2,000—and required a full-time operator.

I began to get some small outboards for the smaller boats, and found them so satisfactory that I now use outboards entirely and Johnsons exclusively.

During last year I bought six new motors (two 25's, two 10's and two 5's) for about $2,000, including insurance.

The two big motors propel a 40 ft. lighter, the two 10's are attached to a smaller lighter, and the 5's are used individually on 20 ft. scows.

This has been a rough winter—plenty of wind, snow and ice. The motors have been in use every day except when the ice was too thick to run through. During this past year, not one motor has failed to start and run—no time has been lost on the 10 mile run to market.

From accurate records, I find that the fuel and labor costs for this entire outfit are less than the cost of maintaining and operating a tow-boat, simply because self-propelled cargo boats and work scows can run to the beds cheaper than they can be towed by a larger boat and an extra man. I believe that the reduction in operating expenses and disposal of the unnecessary tow-boat has more than offset the amount spent for all six motors during the past year.

I anticipate that future economy, plus the high re-sale or trade-in value of Johnson motors, will maintain this little fleet in perpetual new condition, absolutely free, in comparison with other methods of propulsion—and I don't ask for anything to be cheaper than free.

Sincerely yours,

H. Hunt, Jr.

Johnson SEA-HORSES FOR DEPENDABILITY

WIN A $100.00 SAVINGS BOND!

NAME THIS NEW WOOSTER BRASS NOZZLE

ONLY 3 SIMPLE THINGS TO DO

1. Review the features of the nozzle.
2. Fill out form listing your suggested name.
3. Mail to Wooster Brass before September 30, 1955.

Impartial judges will make decision on winning name by October 31, 1955.

Wooster Brass Division
Wooster, Ohio

Here is my suggested name for the new fog and straight stream nozzle.

Name_____

Title_____

Address_____

City_____ State_____

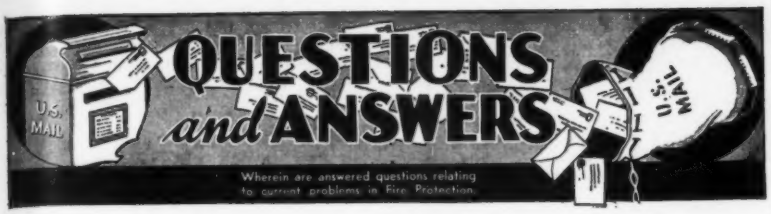
☐ I would like a demonstration of the nozzle.
☐ Please send additional literature and prices.

THESE ARE THE FACTS YOU'LL NEED TO KNOW ABOUT THIS NEW NOZZLE

- This is a "Flow-Rated" nozzle engineered for full use of pump capacity in 125 G.P.M. multiples.
- Less than one easy turn of outer barrel for complete fog pattern range. Barrel clicks into indicated positions for straight stream, 15°, 30° and 90° fog angles.
- Compare these 1½" nozzle characteristics at 100 psi.
  Solid stream projection 125 ft.
  125 G.P.M. fog with 30° angle
  45 ft. projection at 30° angle
- High volume excellent quality fog. Truly no other nozzle compares.

SEE THE NOZZLE AT THE INTERNATIONAL FIRE CHIEFS CONFERENCE AT OMAHA OR REQUEST A DEMONSTRATION BY YOUR WOOSTER BRASS DEALER.

WOOSTER BRASS
DIVISION
THE FYR FYTER CO. • WOOSTER, OHIO



Siamesed Layout; Heat Transfer

To the Editor:

1. Four 200-foot lines of 2½-inch hose are siamesed into two lines of 2½-inch hose each 50 feet long. These are siamesed into a ladder pipe 40 feet high. Pressure at the nozzle is 100 pounds. Discharge is 800 gpm. What is the engine pressure?

2. Is diffusion of heat by conduction faster than diffusion by convection?

A. P.

Answer 1: The problem as we understand it as follows:

Four 200-foot lines of hose are siamesed into two 2½-inch lines each 50 feet long (two 200-foot lines into each of the two 50-foot lines), then those two 50-foot lines are in turn stretched up a ladder 40 feet high and siamesed into a nozzle which is operating at 100 pounds pressure. The engine is delivering 800 gallons per minute at 100 pounds nozzle pressure.

We first find the size of the nozzle. The discharge formula is as follows: Discharge in gallons per minute $= 29.8\ d^2 \times \sqrt{P}$.

In this formula, we put the discharge, which is 800 gallons per minute, and the nozzle pressure, which is 100 pounds, and we get $800 = 29.7 \times d^2 \times \sqrt{100}$, or $800 = 29.7 \times d^2 \times 10$.

From the above we get $\sqrt{2.693} = d$. Taking the square root of 2.693, we find the nozzle diameter to be 1.64 inches or, approximately, a 1⅝-inch nozzle, which has a diameter of 1.625 inches.

Next we combine each of the pairs of 200-foot lines into a single line of 2½-inch hose. The conversion factor is 3.6.

$200 \div 3.6 = 55.56$ feet, which is the length of a single line of hose equal to two 200-foot lines of 2½-inch.

Then we combine the two 55.56-foot lines into a single line. The conversion factor is again 3.6, and we get $55.56 \div 3.6 = 15.4$ feet. Thus the four parallel lines are equivalent to a single line of hose 15.4 feet in length.

Next we combine the two parallel 50-foot lines of hose feeding the nozzle. Here again, the conversion factor is 3.6.

$50 \div 3.6 = 13.9$ feet.

Then the total stretch of hose, single line, in the layout is equal to $15.4 + 13.9 = 29.3$ feet.

Engine Pressure = Nozzle Pressure $\times$ $(1.1 + KL)$

Nozzle Pressure is 100 pounds. K for 1⅝-inch nozzle on 2½-inch hose is 0.68. L, the number of 50-foot lengths of hose in the line, is $29.3 \div 50 = 0.586$.

Then E. P. $= 100 \times (1.1 + 0.68 \times 0.586)$
$= 100 \times 1.5$
$= 150$ pounds

The back pressure due to the elevation of nozzle above the pumper is equal to $40 \times .434$, or 17.36 pounds.

The corrected engine pressure is then $150 + 17.36$, or 167.36, or 167 pounds approximately.

Answer 2: With reference to the second question, we presume by "diffusion" is meant the movement or distribution of heat.

Diffusion of heat may be faster by convection than by conduction. Conduction is the bodily transfer of heated material, such as gases, whereas conduction is the transfer of heat in an object by one part heating the part next to it.

Hydrant Pressure Assists Pumper

To the Editor:

1. "A" claims that when a pumper is connected to a hydrant, the hydrant pressure assists the engine pressure. In other words, if the hydrant pressure is 50 pounds at the suction gauge, the pump pressure only has to be raised to 100 pounds to reach the capacity of the pump, which is a Class A centrifugal rated at 150 pounds and with a capacity of 750 gallons.

"B" claims that to reach the capacity of the pump, you cannot add the hydrant pressure at the suction gauge of 50 pounds to 100 pounds engine pressure, making 150 pounds engine pressure. In other words, to reach the capacity of the 750-gallon pumper, the pressure gauge has to read at least 150 pounds engine pressure. In this case with 50 pounds hydrant pressure, the engine pressure can be raised to 200 pounds for capacity pressure. And this is the only way the hydrant pressure assists the engine pressure. Normally speaking, an engine pumping at 200 pounds pressure delivers 7/10 of its capacity, but in this case with the help of 50 pounds hydrant pressure the engine will deliver its capacity at 200 pounds. Who is right?

2. What is the purpose of a stop valve on a Ward-LaFrance 750-gallon Class A pump? Does this valve work in conjunction with the relief valve? Does this valve have to be opened to operate the relief valve? When the relief valve is set, do you close or partially close this valve?

D. D.

Answer 1: When a pumper is operating from a hydrant under pressure, the hydrant pressure assists the engine pressure.

If the engine is of the positive displacement type, it will utilize less of the

CM-7
(Replaces Carbon Tetrachloride)
New Vaporizing Liquid Fire Extinguishing Agent
offers
New Values for the Attack of Incipient Fires and—
GREATER SAFETY FOR FIREMEN!

- CM-7 inhibits the formation of carbon monoxide when applied to fire, producing instead carbon dioxide.
- Phosgene gas cannot result from the application of CM-7 to a fire.
- CM-7 produces 10% to 20% more fire-stopping vapor than carbon tetrachloride.
- CM-7 boils at 152.5°F, vaporizes quickly.
- Penetrates embers of Class A fires more deeply than any other commonly used vaporizing liquid.
- Leaves a residual fog over the fire area that guards against flashback.

CM-7 is an entirely new chemical. It was invented by I. N. Beall for the Beall Research and Engineering Corporation after approximately two years of intensive research and laboratory tests. Safer CM-7 is more effective in stopping fires while small than any other commonly used extinguishant.

CM-7 is marketed exclusively by RED COMET, INC., Littleton, Colorado, in their "fast action" fire extinguishers.

For additional information, write to

RED COMET, Inc.
Red Comet Building • Littleton, Colo.
Member: National Fire Protection Association

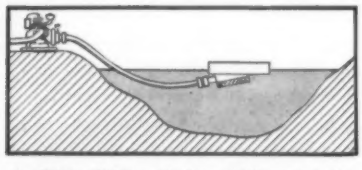
A product of
Beall Research and Engineering Corporation

FOR CLEAN PUMPING IN DEEP or SHALLOW WATER -- Get a REVOLUTIONARY NEW

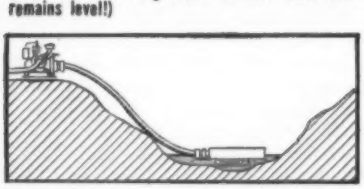
FLOAT-DOCK

IT FLOATS ... above sand and muck--below scum and debris!

No more whirlpools or loss of suction! No more sand and gravel entering your pumps, wearing out impellers, packing, and bearings! Hinged strainer is quickly detached for pumping from vertical water sources such as cisterns, etc. Constructed of heavy, cadmium-plated steel ... Diagrams below show how FLOAT-DOCK empties a pond.



★ DEEP DRAFT — Strainer drafts at a few inches below surface where water is cleanest. (Note how hose weight tilts strainer while float remains level!)



★ SHALLOW DRAFT — FLOAT-DOCK drafts down to about 5 inches depth and still no whirlpool or loss of suction!

SEND for COMPLETE INFORMATION

Write your distributor or send direct to manufacturer for low prices and descriptive folder on FLOAT-DOCK. Be sure to give hose size.

Manufactured Only By
FOL-DA-TANK COMPANY
Box 361, Rock Island, Illinois

hydrant pressure than if it is of the centrifugal type. Depending upon the design of the pump, the centrifugal pump might be able to utilize 90 per cent of the pressure given to it by a hydrant. Thus if the hydrant continually delivered a pressure of 100 pounds to the pump, 90 pounds would be added to the pressure created by the pump giving the total discharge pressure. If the pump were creating 150 pounds, and received 100 pounds from the hydrant, then the discharge pressure would be in the neighborhood of 240 pounds.

You will appreciate, of course, that the amount of pressure utilized by the pump, and furnished by the hydrant, depends upon many factors, including design of pump, speed of operation, etc.

Answer 2: To A. R. Norton, Assistant Service Manager of Ward-LaFrance Truck Corp., we are indebted for the following information. The stop valve on a Ward-LaFrance 750-gallon pumper is to activate the relief valve. The stop valve does work in conjunction with the relief valve. The stop valve must be opened to its extent to operate the relief valve. When using the relief valve, the stop valve is opened to its limit, the relief valve is set at the desired pressure. The stop valve is left in its opened position until such time as the relief valve operation is no longer desired; the stop valve is then closed.

Pump Discharge at Low Pressures

To the Editor:

A first class pumper is usually capable of delivering 100 gpm at 160 psi, 500 gpm at 320 psi; 400 gpm at 400 psi and 250 gpm at 600 psi. But how does this work when instead of going above 160 psi, the discharge pressures were reduced to say 100 psi or 80 psi?

What would be the maximum discharge at these pressures? Would or could the pumper discharge over 1,000 gpm? Would the discharges be less than 1,000 gpm? Would there be any difference between a positive displacement and a centrifugal pumper?

Assume the pumper is hooked up to a hydrant connected two ways (8-inch mains) and has a pressure of 50 pounds per square inch.

D. A. K.

Answer: Where the discharge pressure of a pumper is below the specified pressure for "capacity," the pump will actually be able to discharge more water than the rated capacity. How much increase there would be depends upon several factors such as the design of the pump, safe operating speed, etc.

With a centrifugal pump, a greater discharge can normally be secured at less than "capacity" pressure than from a positive displacement pump. If the discharge from a positive displacement pump is to be increased, the speed of the unit must be increased in proportion. The centrifugal pump has more leeway.

Furthermore, with a centrifugal pump, the pump may utilize more of the hydrant pressure than a positive displacement pump. This utilization of hydrant pressure may be as high as 90 per cent in the well-designed centrifugal pump, whereas it would be materially less than that in a piston or rotary pump.

Formulas for Fog Nozzle Discharge

To the Editor:

I would appreciate your sending me the formula for finding engine pressure and nozzle pressure, using the International fog tip Series 500 and the Rockwood B-500; also the Elkhart new 500 gpm fog nozzle. I have been unable to find a value of "K" for these tips listed in any of the books.

In the formula for engine pressure or nozzle pressure using a 2½-inch fog nozzle on a 2½-inch line, or using a 1½-inch fog nozzle on a 2½-inch line using a reducer, as a 2½-inch fog nozzle is equivalent to a ¾-inch tip and a 1½-inch fog nozzle is equivalent to a .475-inch tip, shouldn't the formula for finding engine pressure or nozzle pressure on small lines be used, namely, E. P. = N. P. × (1 + KL)?

O. D.

Answer: Unfortunately, with different makes of large capacity fog nozzles, there are different discharges for the same pressures. This makes it necessary to have different values of "K" for each nozzle, and in fact, three different values of "K" for each type of one nozzle, due to the fact that you get a different discharge at 30 degrees, 60 degrees and 90 degrees.

The values of "K" for any size fog nozzle when the discharge is known can be found as follows:

First let's consider a fog nozzle giving 450 gallons per minute at 50 pounds nozzle pressure.

Employ the discharge formula which is

$$D = 29.7 \times d^2 \times \sqrt{P}$$

In the formula place the figures which we already have, and we get

$$450 = 29.7\ d^2 \times \sqrt{50}$$
$$450 = 29.7\ d^2 \times 7.07$$
$$29.7\ d^2 = \frac{450}{7.07}$$
$$29.7\ d^2 = 63.67$$
$$d^2 = \frac{63.67}{29.7}$$
$$d^2 = 2.14$$

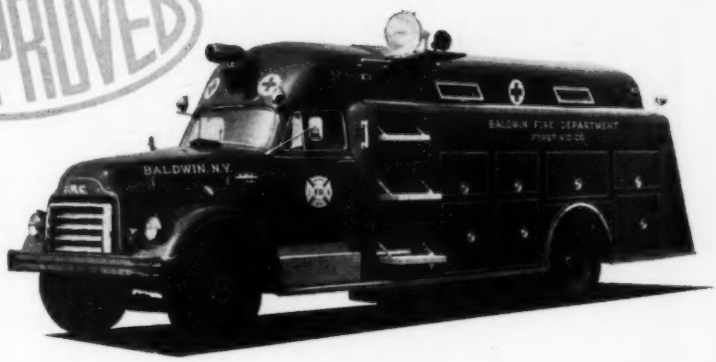
d = 1.463, or 1.46 inches approximately

Now that we have the approximate nozzle size, we can find the value of "K" for this size nozzle on 2½-inch hose by one of two methods. The first method which gives approximate results only, is to take the fourth power of the diameter and divide by 10, or

$$K = d \times d \times d \times d \div 10$$
$$= 1.46 \times 1.46 \times 1.46 \times 1.46 \div 10$$
$$= .454$$

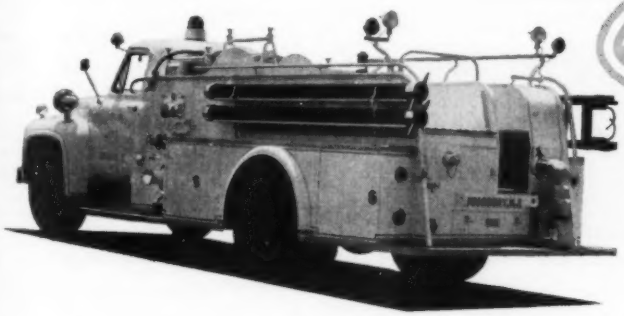
The second method, which is more accurate, is to solve for the value of

APPROVED



Equipped for Any Action! This new APPROVED Emergency-Rescue-Disaster (Senior Model) apparatus for the Baldwin, N. Y. Fire Department is fully equipped and ready to handle any tough job quickly and easily. This rugged, dependable 28,000 pound vehicle features a powerful 225 hp. engine that gets it there fast! APPROVED Standard and Junior Models are also available.

APPROVED



Honey of a Job! Woodbury, N. J. Fire Department is proud of its new APPROVED powerful Pumper apparatus. Instantly ready to tackle any tough fire. Custom-designed, custom-built to Woodbury fire chief's specifications, it will give long, trouble-free service. Other Pumper Models from 500-1000 gpm in one-stage, two-stage, and three-stage with high pressure fog.

It's your equipment... but our reputation

The pictures above show two different front-line fire department apparatus produced by APPROVED. They are different in appearance. They are designed for different jobs. But they have three important things in common:

1. Each piece of apparatus was custom-designed and custom-built *at no extra cost* by the same men. They are careful, dependable men who know their jobs and their responsibilities. They are men with many years of experience in this specialized field.

2. Each piece of apparatus was painstakingly produced in a plant well known for its modern methods. Extraordinary precautions were taken each step of the way to insure finest quality in materials and craftsmanship.

3. Each piece of apparatus can make or break a reputation . . . *our reputation!* That is why APPROVED stands firmly behind every piece of equipment sold. We cannot let you be dissatisfied with APPROVED equipment. Our reputation is worth far too much to us for that.

Custom-Designed . . . Custom-Built

A few choice territories still open for representation. Write us today for locations.

APPROVED

We invite your inquiries. Write Approved today for free literature giving apparatus specifications.

Finest Fire & Emergency Apparatus

APPROVED FIRE EQUIPMENT COMPANY, INC. • ISLAND PARK, NEW YORK

Pumper Apparatus • Emergency-Rescue-Disaster Apparatus • Floodlight Apparatus • Squad & Salvage and Tank Trucks • Aerial Ladders • Airport Crash Trucks

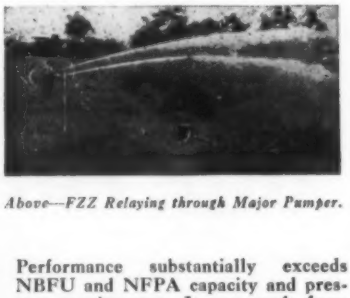
Nip Brush Fires in the Bud with an FZZ

The HALE TYPE FZZ IS MIGHTY HANDY FOR FIGHTING FIELD, BRUSH & FOREST FIRES FROM TRUCK IN MOTION

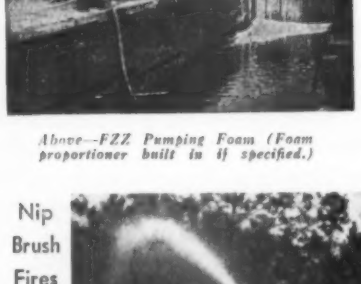
Above and at bottom are two on-the-spot pictures showing a HALE Type FZZ Portable Fire Pumping Unit fighting a brush fire from a moving truck. An FZZ can be mounted or carried on any type of equipment, making it a real "work-horse" for fighting brush, field and forest fires while in motion. Booster tank is used for a source of water.

The Hale Type FZZ is a powerful, sturdy, ready-to-use unit built specifically for fire fighting. Compact, dependable and efficient, it will stand long hours of continuous pumping.

Above—FZZ Pumping solid stream and fog.



Above—FZZ Relaying through Major Pumper.



Above—FZZ Pumping Foam (Foam proportioner built in if specified.)

Performance substantially exceeds NBFU and NFPA capacity and pressure requirements. It can supply from draft, two capable fire streams through 1½" hose lines.

Note: Discharge adapter can be supplied for use with 2½" hose.

Available in carrying frame; mounted on two wheels; or mounted on rubber-cushioned steel channels.

Nip Brush Fires in the Bud with an FZZ

• Write today for FZZ Circular. Ask for Demonstration.

HALE FIRE PUMP COMPANY Conshohocken, Pa. • Fire Pumps in All Standard Capacities

"K" using the engine pressure formula. Thus,

$$E.\ P. = N.\ P. \times (1.1 + KL)$$

The flow is 450 gallons per minute at 50 pounds nozzle pressure. Friction loss is 45.2 pounds per 100 feet of 2½-inch hose.

Nozzle pressure is 50 pounds.

Engine pressure (for 100-foot line of 2½-inch hose) = 95.2. This is secured by adding the nozzle pressure to the friction loss.

Then substitute this value in the formula and we get

$$95.2 = 50 \times (1.1 + KL)$$
$$= 55 + 100\,K$$
$$K = \frac{95.2 - 55}{100}$$

$K = .402$, or .4 approximately.

When you have secured the value of "K," you use the ordinary engine pressure-nozzle pressure formula to find the desired pressure.

In the case of small fog nozzles, the formula employed for finding engine pressure is $E.\ P. = N.\ P. \times (1.1 + KL)$. While the formula used for other small lines, namely, $E.\ P. = N.\ P. \times (1 + KL)$ would also give satisfactory results, the first named formula gives results which are within reason, and has therefore been commonly used.

What's Burning

THE following list includes fires of $10,000 and over in the United States and Canada for the month of August, 1955.

Month Ending August 31, 1955

Avondale, Ariz.—Garcia's Shopping Center destroyed. Building housed a mercantile department, restaurant, meat market and grocery.
Kings Beach, Cal.—Stop and Shop store destroyed.
Los Angeles, Cal.—Storage basement of W. T. Grant store damaged.
Los Angeles, Cal.—A. O. Smith's aluminum and bronze foundry damaged.
Oakland, Cal.—Community Linen and Rental Service destroyed. Spontaneous ignition.
Van Nuys, Cal.—Cardinal of California Furniture Factory destroyed. Hot tar falling into paint spraying booth.
Vap Nuys, Cal.—Van Nuys Furniture Mart and Tots to Ten Shop destroyed.
Mechanicsville, Conn.—Two mills of Uncas Printing & Finishing Co., a subsidiary of Calvine Cottons, Inc., and Consolidated Bleaching Co. destroyed. Smoldering chemicals.
Jacksonvile, Fla.—Warehouse of National Grocery & Tobacco Co. destroyed. Burning trash pile.
Jacksonville, Fla.—Building housing acetylene generating facilities of National Cylinder Gas Co. destroyed.
Miami, Fla.—Dorsey High School for Negroes damaged. Arson.
Chicago, Ill.—Warehouse of Kempler Purchasing Agency Co-op, Inc. damaged.
Danville, Ill.—Oakwood Township High School destroyed. Lightning bolt.
Newton, Ill.—Newton Box & Basket Co. plant destroyed.
Springfield, Ill.—Vacant building at 933 S. Second street, destroyed; spread to apartment buildings at 929 S. Second and to 937 S. Second, which were damaged.
Waukegan, Ill.—Clayton Hotel damaged.
Corydon, Ind.—Wyandotte Cave Lodge and manager's cottage nearby, 18 miles out, destroyed. Defective wiring.
New Castle, Ind.—Jennings & Sons Lumber Co. plant damaged.
Carrollton, Ky.—Big Burley Co.'s Farmers Tobacco Warehouse and nearby dwelling destroyed.
Quincy, Mass.—Power plant, polishing mill and cutting plant of Memorial Granite Co. destroyed.
Wakefield, Mass.—Trailer factory damaged.
Monticello, Minn.—Farm supply feed mill destroyed.
St. Paul, Minn.—A. B. McMahan Co., manu-

facturers of electrical equipment for outdoor signs, damaged.
Collins, Miss.—Pix Theatre, Jordan Brothers grocery, and J. B. Young's dry goods store, destroyed.
Independence, Mo.—Two buildings and heavy machinery at Independent Stove Manufacturing Co. destroyed.
St. Louis, Mo.—Warehouse of Sinclair Industries, Inc., also housing Folding Carrier Corp., Berra Plating Co. and Reddal Co., damaged.
St. Louis, Mo.—National Cover & Manufacturing Co. plastic warehouse damaged.
Lincoln, Neb.—Dining room, kitchen, laundry, chapel, a cannery and tool shop at Nebraska Penitentiary destroyed. Rioting of prisoners.
Carson City, Nev.—Toscano bar and hotel a paint store and an electric shop, destroyed.
Las Vegas, Nev.—Hotel El Rancho Vegas damaged. Kitchen broiler.
Manchester, N. H.—Auclaire Transportation Co. office and storage building damaged.
Blairstown, N. J.—Barn at Howard R. Hill farm on Route 94, destroyed.
Frenchtown, N. J.—Kerr Chickeries, a 150-foot garage, damaged.
Hackensack, N. J.—Three stores near Main and Mercer streets damaged.
Hillside, N. J.—Store and apartment building at Salem & Coe streets, damaged.
Jersey City, N. J.—F. W. Woolworth store on Journal Square damaged.
Lakewood, N. J.—Three buildings at Albert H. Simsen Farms destroyed.
Lanoka Harbor, N. J.—Murray Grove House destroyed.
South Kearny, N. J.—United Cork Companies Inc. damaged.
Castile, N. Y.—Barn on Ervin Helmer farm, Route 39, destroyed.
Syracuse, N. Y.—Three-story business and apartment building in Eastwood section destroyed.
Andover, Ohio—Isaly Dairy Co., Gateway Restaurant, Hall Insurance Co., Ohio Edison Co. offices, Freddy Shoe Repair Shop, Grabert Market and Taylor's Barber Shop, destroyed. Explosion.
Cleveland, Ohio—Brick-drying plant at Euclid Shale Brick Co. destroyed.
Lima, Ohio—Folland Motor Co. damaged.
Sabina, Ohio—Sabina Farmers Exchange elevator damaged. Spark from welding torch.
Van Wert, Ohio—National Polish Co. factory destroyed. Spontaneous ignition of chemicals.
Ashland, Ore.—Ruby's Kitchen Restaurant destroyed.
Grants Pass, Ore.—Bastian Bulb Farm destroyed.
Grants Pass Ore.—Grants Pass Lumber Co. destroyed.
Hermiston Ore.—Eight buildings at Umatilla County Fairgrounds destroyed.
Jefferson, Ore.—Freeres Building Supply Lumber Co. destroyed.
Lebanon, Ore.—Brownsville Grain Co. elevator destroyed.
Nybend, Ore.—Shevlin Hixon round house destroyed.
Oregon City Ore.—Redland Lumber Co. destroyed
Rainier, Ore.—Van Fleet Lumber Co. destroyed.
Warden, Ore.—Tulana Farms trucks and equipment destroyed. Explosion.
Forestville, Pa.—Storage building of Walters & Haas Co., building contractors, destroyed.
Nine Points, Pa.—Barn owned by William Groff destroyed.
Oil City, Pa.—Storage building of Pennzoil Co. destroyed.
Philadelphia, Pa.—Terminal Food Market damaged. Red Arrow Lines bus station damaged.
Pittsburgh, Pa.—Highland Floral Co. and neighboring Strem Photo Shop damaged.
Pittsburgh, Pa.—Building in heart of Golden Triangle, housing Rand Drug Store, Portal Inn, Triangle Billiard Parlors and Knights of Columbus, Council No. 491, destroyed. Explosion of tank of propane gas.
Tamaqua, Pa.—Three-story building in heart of business section damaged.
York, Pa.—Pine Tree Inc., Route 30, west, damaged.
Fairfax, S. C.—Gin and several warehouses, seed houses and machine sheds on adjoining property and a store owned by George D. Kirkland destroyed.
Campaign, Tenn.—New main building of Vehicle Supply Co. lumber manufacturing concern and also a storage shed, destroyed.
Honey Grove, Tex.—Building housing Honey Grove Signal-Citizen, weekly newspaper; warehouse and shipping department of Diaper Jeans firm, manufacturers of infants' wear; J. E. Robinson tailor shop and quarters of Masonic and Eastern Star Lodges, destroyed.
Mineral Wells, Tex.—Mayflower Manufacturing Co., a subsidiary of Pollack Box Manufacturing Co., damaged.
Farmville, Va.—Masonic Building, housing lodge and hardware and dry goods stores, destroyed.
Fredericksburg, Va.—Building at W. H. Simpson & Son lumber firm destroyed.
Staunton, Va.—Riggs & Young, Inc. warehouse destroyed. Lightning.
Aberdeen, Wash.—Newshkah Shingle Mills destroyed.

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Spokane, Wash.—Armour & Co. grain storage destroyed.
Tacoma, Wash.—Tourist Hotel and adjacent offices damaged. Cigarette.
Tacoma, Wash.—Union Pacific Railway's 600-foot trestle destroyed.
Walla Walla, Wash.—Tompkins & Nebler grain warehouse and elevator damaged.
Vancouver, B. C.—New Dominion Construction Co. damaged.
Brampton, Ont.—Main barn and milk shed on Rosafe Farms, two miles northwest, destroyed.
Cheticamp, N. S.—Fishermen's Co-operative plant destroyed.
Lucan, Ont.—Lucan Motors garage destroyed and two adjoining dwellings damaged. Auto gas tank explosion.

Among the Buffs

By Paul C. Ditzel

Now that vacation time is over for some of us and just beginning for others, I'm reminded of Kansas City's Tom Jewett who recently made a junket to points in the northwestern area of the United States, thence into Canada.

Tom is, as you know, no stranger to these columns, and his travels 'round the world are replete with stories of his firehouse visits. I believe Tom would actually forego a visit to the Taj Mahal if he could take in a blaze or go off to ferret another fire volume to add to his library of 110.

Brer Jewett, who turns out of 6442 McGee St., Kansas City 13, Mo., when he isn't traveling, postcards that he is again having a fine time. While he was in Europe last summer he became taken by a fancy continental type of fire horn —used in lieu of sirens which still leave a bad taste in war-weary European's mouths.

The United States Customs people, stuffy people, wot, had different ideas when a weird looking crate containing Tom's siren arrived at these shores. There followed a two-months war of letters. The Customs people wanted 70 per cent of the price paid for the prize and Tom took the whole matter up with Washington which finally become so weary of the hassle that they came down to 25 per cent.

Tom, we'll have you know, is quite a human benefactor. He graciously installed the Winkworth of Staines, England, horn on his wife's spanking new Chevrolet. Tom doesn't mention that his B.W. thought of this wrinkle, but from other letters we've had from him we gather she's a wife with an understanding that would gladden the heart of any buff.

In any event, Tom now is known around staid Kansas City as Ding-Dong Jewett. Sources of this column report that when Tom arrives at a friend's home, he heralds his arrival with a blast of his pom-pom. We saw, too, from a recent Associated Press story that Kansas City had an air raid alert which turned out to be a false alarm turned in accidentally by a grotesque air horn. I'm waiting to hear from Tom as to the effectiveness of his newfound plaything in the Northwest Woods.

Before we get on to less monumental matters in this month's essay, I should mention, too, that when Chief Brook Beatty of the Leawood, Kansas Fire Department heard Tom's heralded approach, he promptly fell in love with the little jewel and bought one himself from England. Chief Beatty installed it on his new jeep which he uses for grass

fire service. Such a noise!

One of the most effective buff organizations we've come across is the Box 52 Association of Boston, Mass., which has patiently been sending me their elaborate monthly reports for some time.

Box 52 is one of this country's best known buff groups as most of you know. It was organized in 1912, and incorporated in 1918. The group's insignia, a fire alarm box numbered "52", commemorates the box first pulled for the Great Boston Fire of 1872.

The association's objectives are: the promotion of social and friendly relations among those interested in fire fighting and fire prevention; the spreading of authentic information on problems of fire fighting (if you could see their monthly paper you'd know that they mean this, too!) and the education of the public in the proper methods of fire prevention. These "sparks" as they prefer to be called, also maintain a long history of friendly relations between their club and the fire departments of Boston and surrounding communities.

The last I heard from them, their officers were: Frederick W. Kurth, president; Donald H. Kerr, vice-president; Freelon Morris, treasurer and Richard M. Lombard, secretary. Board of Directors' members are: William M. Corcoran, Charles L. Curtaz, George S. Drew, Paul R. Knlght, Jr., James G. Moulton and Everett L. Turner.

Would that there were more organizations like Box 52 around the country.

Speaking of top notch outfits reminds me of an incident involving the Phoenix Society of San Francisco when their members turned out in force for the muchly-publicized four-alarmer at the Italian Village Night Club.

What didn't make the papers—but did make Doc Levin's newsletter—was the fact that Clayton Sherman assisted singing star Beatrice Kay in getting some of her sheet music back. Miss Kay was the featured performer at this night spot. The club's mutual aid plan went into operation and even Bryant Thompson galloped over from Oakland to see how things progressed.

That's it again for this month. I'm still pounding out the copy from my sand dune at 419 Napoleon St., Playa del Rey, Calif. Keep me in mind if you have any fascinating tidbits, but count me out if you're thinking of asking me to become a go-between to bring more of Tom's Ding-Dongs to this country.

Rescue

(*Continued from page* 862)

blades, plus a hollow shaft and a two-inch thick bar inside. Meanwhile, another cutting torch cut through the screw outside the corrugated metal shack covering the hopper.

Murray remained conscious, and calmly gave them instructions on the construction of the huge corkscrew, but passed out later while being lifted onto a stretcher.

Once the screw was burned through, it had to be edged horizontally through the bulkhead. An additional problem developed. The screw could not be edged through the bulkhead hole until another, smaller, section was cut out to give an easier passage for the burned section.

The victim died, however, two weeks later.

PAUL DITZEL

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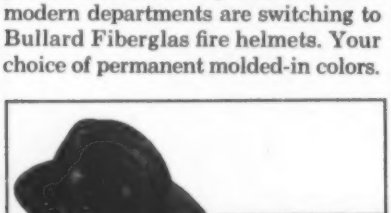

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The ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

LICENSING OIL BURNER INSTALLATION MECHANICS

THE Round Table this month discusses the major problem of licensing oil burner installation mechanics. Five questions have been answered by several representative fire departments, and to them, our appreciation.

The questions asked were as follows: 1. Are oil burner installation mechanics licensed in your city? 2. If not, should they be? 3. If licensed, who determines their fitness? 4. If not licensed, who should do the examining and issuing of licenses? 5. What benefits accrue from licensing mechanics?

The responding chiefs were about equally divided in number on Question No. 1. Many chiefs who reported there was no licensing arrangement, stress the fact that although mechanics are not licensed, they must have a permit, or certificate of fitness; also many cities require the contractor to be licensed.

Fire chiefs who reported no licensing were practically unanimous in in stating it should be done.

There was some difference as to the agency who determines the fitness of the licensee. In some instances it is the local fire chief, the Fire Prevention Division, or the State Fire Marshal. In others it is an examining board made up of representatives of the warm air heating industry, the building inspector, the heating inspector, a representative of the fire department, etc.

Those who had no licensing arrangement felt almost the same way about who should do the certifying, as did the chiefs whose cities required this practice.

Many advantages were cited by respondents. The chief one is that the practice helps eliminate the fly-by-night installer and mechanic. Most chiefs agree examinations (and licensing, or issuance of permits) proves a man has knowledge and is competent. It reduces the number of fires and minimizes losses from such fires as do occur. It insures a greater degree of safety and, as stressed by many, it makes it possible to insist that the installations conform to safety standards. In brief, such practice insures control of installations, making it possible to inspect workmanship and materials. Finally, the move is economically sound, some chiefs believe, because it provides a financial return to help pay the cost of the inspection and licensing services.

Readers are invited to participate in this discussion which will be continued in the October issue. Address replies to Round Table Editor, FIRE ENGINEERING, 305 East 45th Street, New York 17, N. Y.

Discussion of the Topic

Milton C. Andrews, Chief, New Bedford, Mass.: Oil burner installation mechanics are not licensed, but they do have what could be considered as its equivalent, which is a Certificate of Competency, which is secured from the State Fire Marshal.

In Massachusetts, under our State Laws and Regulations, the State Fire Marshal determines their fitness. By means of an oral examination and using oil burner equipment, he either grants or refuses a certificate to the applicant. The applicant makes application on an approved form, giving his experience, etc., the form requiring the approval of the fire chief as to the applicant's qualifications.

It is my opinion that the present system of requiring a Certificate of Competency is a very good system and is working effectively.

The main benefit from requiring a certificate or license is that the person holding it has proved through a proper examination given by the State Fire

HERE ARE THE QUESTIONS

1. **Are oil burner installation mechanics licensed in your city?**
2. **If not, do you believe they should be?**
3. **If licensed, who determines their fitness? Who issues the license?**
4. **If not licensed, who do you feel should do the examining and issuing of license?**
5. **What benefits do you believe accrue from licensing these mechanics?**

Marshal's staff that he has the knowledge and is competent to do oil burner installation, repair or alteration work. Lack of a certificate or license prevents all other persons from doing this type of work. The person not qualified and unlicensed would make faulty installations or alterations which, in many instances, would result in fires, explosions and loss of life. It would confine oil burner work to proper persons.

The principal benefits, therefore, are the elimination or, at least, the minimizing of fires, explosions and loss of life due to faulty and improper installations, repairs or alterations of oil burners.

John R. Lynch, Chief, Youngstown, Ohio: Mechanics are not necessarily licensed although the heating contractor must conform with the city ordinance by obtaining a heating contractor's license.

The contractor is examined by the Examining Board of Warm Air Heating which consists of five members who serve without compensation and who are appointed by the mayor. Members of the board, with the exception of the fire chief, must have been actively engaged in the warm heating business as a heat engineer, contractor or journeyman for at least five years.

The applicant who passes a written examination with a mark of not less than 75 per cent is granted a license by the Examining Board after payment of the specified fee and the posting of a surety bond as provided by city ordinance.

The contractor is responsible for all work done by him or under his supervision and whenever it comes to the attention of the heating inspector in the Division of Building Inspection that any installation is being made contrary to, or in violation of the building code or fire prevention ordinance, said inspector is authorized to order any such work immediately stopped and may revoke both the permit and the license until such installation has been made to comply with provisions of the building code.

Donald S. Charles, Chief, Charlotte, N. C.: Oil burner installation mechanics as such are not licensed in our city. However, this particular type of installation comes under the supervision of the Plumbing and Heating Division of the Building Inspection Department, which requires that all heating contractors be licensed and that the appropriate city codes be adhered to in making such installations.

It is my opinion that these mechanics should be licensed after successfully passing an examination conducted by the Plumbing and Heating Division, the supervising agency.

While we have had no great amount of trouble from a fire experience standpoint under the present proceedure, such a system as mentioned above would further assure even a greater degree of safety through the operations of a mechanic specially trained, examined and licensed to perform this particular type of work.

Barney J. Houston, Chief, Cincinnati, Ohio: Oil burner installation mechanics are not licensed in this city.

It is our feeling that the Chief Smoke Inspector, a representative of the Fire Department and a representative of the Flammable Liquids Divi-

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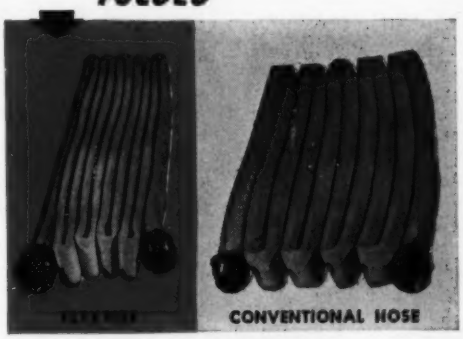

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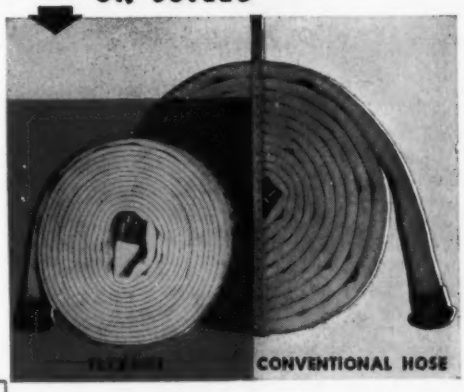

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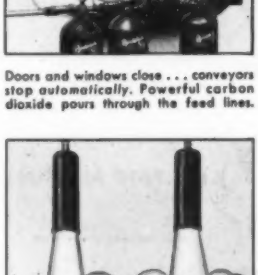

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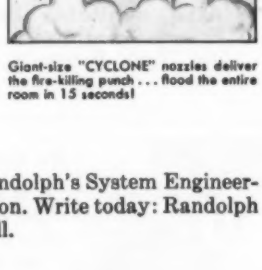

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sion of the Building Department should comprise an examining board, and that licenses be issued by this board.

The benefits accruing from licensing these mechanics are:

1. The reasonable certainty that installations would be made which would conform to installations standards.
2. It would serve to keep at a minimum or eliminate entirely substandard installations.
3. It would help to keep mechanics up to date on changes and procedures in making installations.
4. It would give the licensing board the right to withdraw licenses when repeated offenses against installation standards occur.

Edward Grenfell, Chief, Portland, Ore.: Section 14-803 of the Portland Fire Code provides that "It shall be unlawful for any person to install or service any oil burner or device connected thereto, including tanks, dampers, pipes, controls and fire boxes, without first securing a certificate of fitness from the Fire Marshal certifying that he is familiar with this code and is qualified and authorized to service and install oil burners and devices as described in this code."

The Fire Marshal determines fitness by examination and issues a "Certificate of Fitness."

The most important benefit for licensing these mechanics is the buyer's assurance of properly and safely installed equipment. This is additionally guaranteed by the Fire Marshal's approval of the equipment he buys and by the Fire Marshal's permit which must be secured for each installation of tank, burner and appurtenances thereto. Following final inspection, the permit application and copies of the permit become permanent records in the Fire Marshal's office.

F. C. Vernotzy, Chief, Akron, Ohio: All heating contractors in the City of Akron are licensed. They must pass an examination prepared and given by the Warm Air Examining Board which is composed of two licensed heating contractors, two persons with at least four years of experience in the heating business, one person from the general public who is qualified by training and experience, but not engaged in the heating business (present citizen member is the head of the Mechanical Engineering Department of Akron University) and the Chief Fire Warden of the City of Akron.

After satisfactorily passing the examination the applicant is issued a license.

By licensing heating contractors, control can be maintained over the quality of their work.

William V. Pfefferle, Chief Engineer, Camden, N. J.: Oil burner installation mechanics are examined by an Examining Board consisting of the Chief of the Fire Bureau, the Chief of the Electrical Bureau and two contractors engaged in the business of installing, repairing and servicing oil burning equipment. All licenses are issued by the City Clerk after approval by the Examining Board.

The adoption and enforcement of ordinance with the cooperative policing of the industry by the licensed contractors have practically eliminated the installation of substandard, defective and makeshift oil burning

equipment by fly-by-night concerns and incompetent mechanics.

While the ordinance designates the Chief Engineer as the authority for inspection and approval, all such activities have been delegated to the Fire Marshal's Office and the issuance of licenses, permits and the collection of fees to the City Clerk's Office.

H. G. Coates, Chief, Windsor, Ont.: Oil burner installation mechanics and all heating installation mechanics are licensed in Windsor.

A board, composed of seven members appointed by the City Council and comprised of the Building Inspector, two master heating contractors, and three journeymen heating men, all of whom must have a minimum of ten years experience in their respective fields, is responsible for the issuing of licenses.

Licensing of these mechanics protects property owners from unscrupulous mechanics and insures safe installations made in accordance with the best known methods.

Charles A. Johnson, Chief, Fire Prevention Bureau, Minneapolis.: The Building Department License Bureau issues a license to oil burner installation mechanics after approval by the Building Department.

Licensing these mechanics helps improve oil burner installations, thus reducing hazards in connection with such installations. The Fire Prevention Bureau of the Fire Department must necessarily be the watch dogs, and we have ordered many corrections after approval by the oil burner inspector of the Building Department. When he has a real problem he seeks our advice. Years ago we used to enforce the oil burner ordinance.

Lieutenant R. K. Heymel, Officer in Charge, Fire Prevention Bureau, Tacoma, Wash.: Oil burner mechanics have been licensed and controlled under ordinance since 1948.

The applicant is interviewed by the officer in charge of the Fire Prevention Bureau or a bureau member, on tanks and burner, and furnace inspection detail, etc. Licenses are issued by the Tax and License Bureau subject to approval.

Substandard installation would be common, as we have been able to observe in the county where no code is required. Inspection, permits and licensing provides a degree of protection for the conscientious dealer. It also standardizes the price to the citizen and protects his investment. Primarily it reduces fire losses, as licensed mechanics understand that certain standards must be met to receive clearance for a safe and workmanlike installation.

C. R. Hanna, Lieutenant, Fire Prevention Bureau, Memphis, Tenn.: Oil burner installation mechanics are not licensed in the City of Memphis.

If they were required by the city to have a license, they should be examined by a board made up of competent oil burner contractors and engineers. This is now under consideration. Licenses would be issued through the Building Inspector on his approval.

The benefits, in my opinion, would be better and safer installations.

Forrest B. Lucas, Chief, Dayton, Ohio: Oil burner installation mechanics are licensed in our city.

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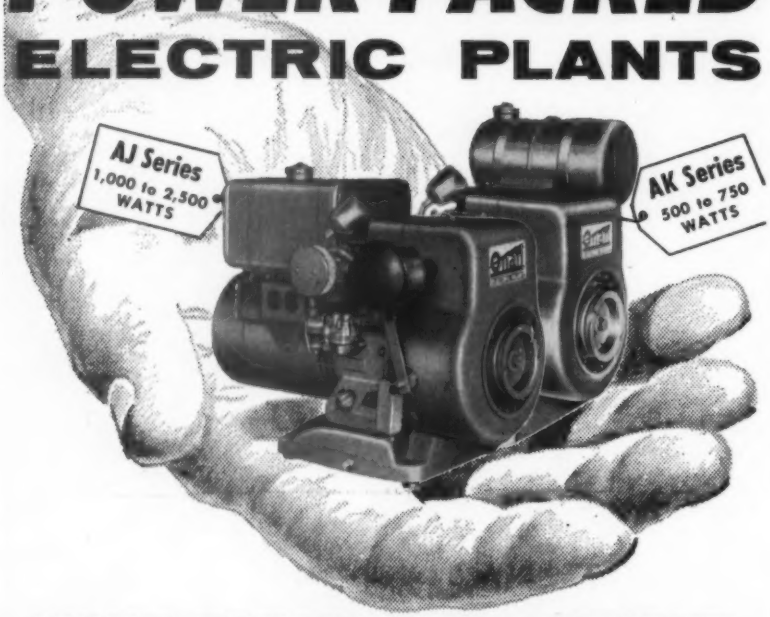

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They are examined by the Warm Air Heating Board consisting of a member from the Fire Department (the District Chief of the Fire Prevention Bureau), Warm Air Heating Appliances Inspector, Smoke Abatement, Combustion Control Department and two persons from the plumbing and heating trades.

As a result of licensing these mechanics, we have had no trouble at all with fires in this equipment over a period of ten years.

In general, the public is protected from unscrupulous individuals and contractors as a result of licensing.

Allie A. Feldman, Chief, Denver, Colo.: While we do not license oil burner mechanics in Denver I believe it should be done. The Building Department should give the examination to determine fitness. At present they examine and inspect everything which goes inside of a building. The Fire Department should also enter into the picture, especially of an installation on the outside.

The Building Department could set up an examining bureau which would determine the fitness of an individual and set up procedures for him to follow. This would eliminate all incompetent installers. A licensed mechanic could have his license revoked if he did not follow the correct procedures.

H. J. Sommers, Chief Engineer, Newark, N. J.: We do not license oil burner installation mechanics here.

I believe they should be licensed by the Electrical Department after approval by the Fire Department as to type of burner, tank location, safety factors and emergency switch.

The mechanics, if licensed, would have to be a competent mechanics and familiar with all regulations governing installation. The fact that he is licensed and that his license could be voided for incompetency, would tend to make him comply with all regulations in effect.

Henry G. Thomas, Chief, Hartford, Conn.: All persons installing or servicing oil burners in Hartford must be licensed by proper authorities. Licenses for those installing or servicing power burners and units burning No. 2 oil or above are licensed after a written and oral examination by the Heating Engineer and a competent Board of Examiners. Licenses for those installing or servicing range burners or similar devices using light oil No. 1 are licensed after a successful oral examination conducted by the Fire Marshal and are renewable yearly.

In addition, for further control of these devices using light oil and persons involved in their sale or use, the following permits are also necessary and are issued upon application and approval by the Bureau of Fire Prevention of the Fire Department:

1. Permit to sell light oil.
2. Permit for tank truck to deliver light oil.
3. Permit to sell ranges and similar devices using light oil.
4. Permit for the storage and use of light oil.

Application must also be made to the Fire Department for the installation of all units burning oil heavier than No. 1 and for all permits to sell and deliver this oil within the city.

We feel that the above requirements which give us complete control over

all devices using oil as a fuel from the time that they are sold until they are installed and in use, not only gives us an accurate and current picture of what oil burning equipment is in use in our city, but will insure that only approved and safe equipment is installed and in such a workmanlike manner as to make certain its safe operation as close to maximum as it is possible.

Rene J. Patingre, Chief, Springfield, Mass.: All oil burner installation mechanics are required to have a Certificate of Competency. Whenever any application is made out for the installation or alteration of any oil burning equipment at my office, the applicant must produce the certificate.

Certificates of Competency are issued from the office of the State Fire Marshal after the Marshal has satisfied himself as to the fitness of the applicant after an oral and practical examination. The practical examination is an actual demonstration on oil burning equipment by the applicant.

I am in accord with the present system of licensing, as it is now conducted.

Prior to 1947, no licensing of any kind was required for oil burner installations. The number of fires in connection with oil burner equipment prior to November, 1947, was far greater in ratio to those in the years since. It is my opinion that the State Law which became effective in November, 1947, was the major factor in the lessening of the number of fires in connection with oil burning equipment.

* * *

The following replies are in answer to a previous discussion on the training of fire apparatus drivers.

Herman H. Follin, Jr., Chief, College Park Volunteer Fire Department, College Park, Md.: The College Park Volunteer Fire Department is a volunteer organization in every sense of the word. We do, however, have a well planned pump operators driver training program. Men desiring to become drivers must meet certain requirements. They must be at least twenty-one years of age, have no physical defects, show interest in fire department activities, and have a proper attitude.

The training program is divided into two sections.

Section I—This section is an inside classroom instruction of pump operators, teaching the theory of pumps, use of governors, use of priming devices, hydraulics, and maintenance of pumps. This is a twelve hour course with a written test. The men then go to outside classes for an additional twelve hours, putting the information taught in the classroom into actual practice. Upon completion of this another test is given.

Section II—Driver's Training—This section is also of two parts—an inside classroom session of six hours on the operation and maintenance of equipment, road condition, bridge loads in the area and safety precautions. The outside sessions are actual driving tests through city traffic conditions, rural areas and an obstacle course.

Upon completion of these classes the men are permitted to drive the apparatus on returning from fire calls.

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2364 W. State St. Milwaukee 8, Wis.

The company officers will then recommend these men for drivers as soon as they feel they are qualified. Approved drivers are given additional training in the operation and maintenance of the aerial ladder before being qualified to drive this piece of equipment.

We have found the program very satisfactory and highly recommend an organized driver training program.

Thomas J. Phelan, Chief, Trenton, N. J.: Firemen are picked by their captains as to aptitude and physical qualifications and then turned over to the Mechanics Division and given road tests. If qualified, they are assigned to drive back from fires or sent back to operate pumpers during wetting down operations. Then upon being qualified by the captains, they are tested by the Mechanical Division both in street operation and pumps and then assigned generally as third drivers.

To train a qualified driver takes about a year.

The men are taken into the shop and are tested each year on pumps and their operation, to determine their fitness.

Calvin P. Johnson, Chief, Flint, Mich.: To become eligible to drive a piece of fire apparatus, a man must first have completed three years on the fire fighting force and hold a Michigan driver's license. After that time, if there is a need for an extra driver in the station on the shift that the man is assigned, he is then given a road test by the master mechanic. If the master mechanic at that time feels that this man is capable of driving, he is then taught the proper method of operation of the piece of equipment. A form signed by this master mechanic and the company officer is turned in, verifying this man's ability to drive and operate a truck. He then may be assigned by his officer to drive a truck in the absence of a paid driver and also to practice driving by taking over the wheel in bringing the truck back to the station. We have two classes of paid drivers, first and second. One first driver and one second driver is assigned to each piece of apparatus on each shift in each station. The second driver assists the first driver in the care of his apparatus and drives only in the absence of the first driver. When a vacancy for second driver occurs, the most capable extra driver is selected by the company officer and the master mechanic. In case of a vacancy for first driver, the second driver with the most seniority is selected.

We require no written tests. Any driver may be relieved of his driving responsibilities at any time that it is felt he is not able to perform his duties properly, so all are actually going through a continuous testing program. Through this system we have been able to maintain an excellent and well-trained group of men as drivers who are able and willing to assume their additional responsibilities.

Frank S. Sandeman, Chief, Long Beach, Cal.: Our drivers do receive special training. A section of our drill manual is devoted to a detailed "Pumping Procedure" and another to "Driving Procedure." During our six weeks basic training course, each member is instructed in driving and pumping procedures. They are rotated as each evolution is performed, thus taught very early in the course how to drive and handle a piece of apparatus.

The following items are covered in the "Driving Procedure":

1. Starting Motor:

a. Check gear shift lever for neutral position, set emergency brake.
b. Turn on ignition switch or switches.
c. Retard spark lever. (If not automatic)
d. Advance throttle. (About one-third)
e. Use choke properly, do not overchoke.
f. Disengage clutch, press starter button till motor starts.

Motor Running:

g. Advance spark lever.
h. Retard throttle to proper idling speed.
i. Readjust choke as necessary.
j. Avoid racing motor when idling.

2. Getting Under Way:

a. Turn on necessary lights.
b. Disengage clutch.
c. Put gear shift lever in proper position for starting. (This will usually be low gear.)
d. Release emergency brake.
e. Engage clutch slowly, (do not jump) advance throttle.
f. Shift to next higher gear when proper speed is obtained. (It is best not to shift gears until clear of station.)
g. Continue shifting through consecutive higher gears until proper driving gear is reached.

3. On the Road:

a. Obey all traffic regulations of State, City and Department.
b. Be alert and careful at all times, particularly at intersections and in heavy traffic.

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NORTH BERGEN, N. J.

c. Be ever watchful of "the other driver," you never know what he is going to do.
d. Except on emergency runs, obey all traffic signals, boulevard stops, etc., stay on your own side of the road.
e. Give arm signals properly.

4. **Going Down Grade:**
a. Slow down upon approaching grade.
b. Shift down to proper gear (same gear as required to ascent grade) before reaching crest of grade.
c. Use brakes intelligently (Fanning).

5. **Going Up Grade:**
a. Accelerate before reaching grade.
b. Shift to next lower gear when motor begins to labor.
c. Continue to shift down as necessary. (Ability to shift down is important, can be done without clashing gears.)
d. Use proper gears at all times; don't "lug" motor.

6. **Spotting Apparatus:**
a. Slow apparatus before reaching hydrant.
b. Approach hydrant at correct angle for connecting suction.
c. Spot apparatus. (With aid of relief driver.)
d. Put transmission in neutral, set emergency brake.

7. **Backing Up:**
a. Back slowly and cautiously. (Don't rely on rear view mirror)
b. Keep all apparatus doors closed when backing.
c. Allow proper clearance on both sides.
d. Stop in proper position.

8. **Secure Apparatus:**
a. Disengage clutch, shift transmission to neutral position.
b. Set emergency brake.
c. Turn off ignition switches.
d. Retard spark lever.
e. Turn off all lights.
f. Reset speedometer to zero. (Some speedometers may not have a reset.)
g. See that front wheels are straight.
h. Check apparatus and equipment, see that everything is in proper condition for immediate response.

D. Sequence of operations—Engine

1. At truck with motor off
   a. Go through operation to draft
      (1) Explain why pump is in 'volume' while drafting
   b. Pump through one jump line
      (1) Check 1½" hose bed
      (2) Do not pull discharge gate until you have pressure
   c. Show how to get wet water
   d. Duplex gauge
      (1) Purpose
      (2) Position when Unox is out
   e. Supply valve (tank)

E. Daily check list

1. Radio
2. Gasoline (look in tank if possible)
3. Batteries (reading and water)
4. Oil (engine and prime)
5. Water (radiator and tank)
6. Tires
7. Equipment (visual inventory)
8. Nozzles closed, reducers tight (large & small suctions), gaskets in place and good condition
9. Drain valves closed
10. Visual check of steering and brakes

F. Weekly check (suggested on brass day)

1. Check all discharge gates
2. Four-way valve
3. Gated wye
4. Nozzle handles
5. Tips tight but not too tight
6. De luge (swivel, etc.)
7. Relief valve or governor
8. Flush radiator
9. Mechanical foam, access to
10. Tire pressure
11. Transfer valve
12. Inventory (by book)

G. Monthly check

1. Pump under pressure (150 lbs.)
   a. Check for water and oil leaks. Best just before monthly apparatus report.

H. Application—(Road test)

1. Driving
   a. Clutch
   b. Shifting down
   c. Turning
   d. Backing
   e. Spotting for hook-up
      (1) Small suction

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Battery Division, Department 95-BV

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(2) Large suction
2. Operation of pump at draft
   a. Setting relief device under simulated fire conditions
   b. Staging pump
      (1) Single line
      (2) Multiple lines
3. Flushing pump

I. Response of apparatus enroute to fire
1. Legal aspects
2. Moral aspects

G. R. McAlpine, Chief, Oklahoma City, Okla.: A driver of fire apparatus in the Oklahoma City Fire Department is promoted on the basis of seniority, if and when he has proven to be a competent driver.

To determine his competency, he is permitted to drive back from fires, and to drive the apparatus during the absence of the regular driver. In this way, we determine whether or not the man will prove to be a competent driver at the time he becomes eligible for promotion.

After a man receives his promotion to the rank of driver, we use a reporting system which requires the company officer to make a written report monthly for a period of one year as to his driver's competency and willingness to cooperate with his company officer.

Each fire company reports to the drill area twice a year for 25 hours of drill. This is five hours daily for five days. At this time special instruction is given the drivers of fire apparatus in proper pump operation, proper spotting, proper starting and stopping, proper braking and general care of the apparatus. This work is done under the supervision of the drillmaster and master mechanic. If the driver fails to properly handle his apparatus, he is given special instruction, and if he fails to correct his faults, then he is demoted back to fireman first grade.

We hold a two-day driver's clinic annually with instructors furnished by the fire department, the police and the highway patrol. This course includes lectures and motion pictures for one day, and testing eyes, hearing and driving ability the second day. The driver is then graded.

During the months that the fire company does not come into the drill area, company drills are held daily for 1½ hours. This drill period also includes instructions to the drivers.

It takes a year at least after a driver receives his promotion to the rank of driver before he is fully trained. Some drivers become efficient sooner than others due to their temperment or general make-up.

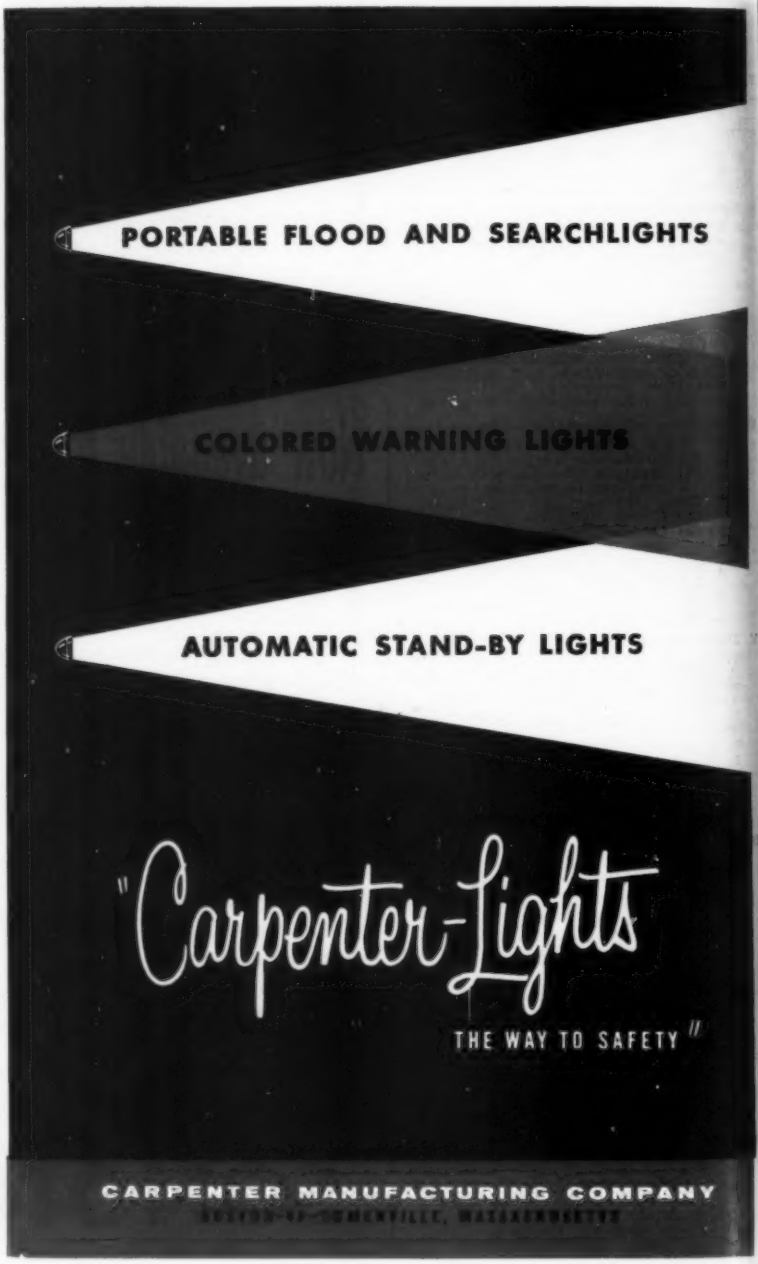
The driver can make or break a fire company. You may have the best company officer commanding the company, but if the driver fails to observe and practice the rules of driving, he can and will be responsible for a company failure sooner or later. It is my opinion that the driver of fire apparatus should observe these rules of safety.

1. Check apparatus daily to determine if there is anything faulty with it
2. Keep the mechanical parts of apparatus clean, for in so doing, you will find anything that is not in order
3. Counsel with company officer and have a thorough understanding with him
4. Observe the fire department speed regulations as established by the department
5. Make it a practice to travel on fire lanes when responding to fires, and when crossing other fire lanes approach with extreme caution
6. When responding to fires approach all signalized intersections with caution and especially when signal is red
7. When returning from fires, observe all traffic regulations
8. When filling in at other stations during a multiple alarm fire, proceed to the station with extreme caution
9. When parking or spotting apparatus at a fire, give careful thought to the possible damage to the apparatus by fire
10. Keep constantly advised as to the weather, so you can properly prepare the apparatus for bad street conditions.

G. N. Paris, Chief, Tulsa, Okla.: Members of our department receive special training to qualify them to become drivers.

This special training consists of driving and handling apparatus, pumper and aerial operation, hydraulics and care and inspection of apparatus.

Members of our department must complete three years of service as firemen before they become eligible to take examinations for drivers.



We hold regular examinations to fill these positions. These examinations consist of driving and pumping operations; oral and written tests on hydraulics and general fire department knowledge; job efficiency ratings and seniority.

William Van Pfefferle, Chief, Camden, N. J.: Members of our department assigned as drivers do receive special training.

This training consists of the following: Study of manufacturers' manuals on operation, motor vehicle laws and bureau of fire rules and regulations, daily instruction of about two hours on each tour of day duty under the supervision of a qualified driver of the apparatus at an area where traffic is at a minimum. Trainee is taught to maneuver the apparatus in all types of positions, angles and directions. Upon approval by the qualified driver, trainee is permitted to drive the apparatus returning from fires or other emergencies and to back into the station under the supervision of the driver and commanding officer.

Upon passing this phase of training satisfactorily, trainee is next ordered to drive apparatus to fires at times when street traffic is at a minimum until such time as the instructing driver and the commanding officer feel certain he is fully qualified. He is then entered on the fire bureau records as a qualified driver.

The training period varies according to past experience and aptitude, but it usually takes two to three months.

Training of drivers has become a relatively simple matter as practically all men entering the department since World War II are veterans who have had considerable training and experience in handling heavy equipment during their military service.

Robert A. Bogan, Chief, Baton Rouge, La.: Prospective drivers are trained to use pumper, drive, etc., and before even being appointed to the position as driver, drive from the fire under the close supervision of their captain and district chief. The actual time required is from their entrance into the department after they become familiar with their surroundings, until actually appointed driver. No special classes are held other than our regular drill periods of study. Then they are taken periodically to the drill field for practice sessions on the pumper, operation, etc.

After they have completed the training period they are given a driving test, as well as a written one.

Drivers are selected on a promotional basis as long as they can perform the work in a satisfactory manner.

H. G. Coates, Chief, Windsor, Ont.: Firemen assigned as drivers receive training under supervision until they qualify. It takes about 12 to 15 hours of actual driving before they are qualified.

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The Watch Deck

(*Continued from page* 875)

from Box 17, corner of Willard and West Main Streets at 9:03 p.m. Almost simultaneously, an alarm was sounded on the Matamoras fire alarm system.

It developed that a fire, which had started in the Matamoras Borough dump along the Matamoras-Mill Rift Road, had blazed up into the sky and was visible for some distance—obviously across the 500-foot Delaware River that separates Pennsylvania from New York at that point. Air line distance, the fire was about one-quarter mile from Box 17 in Port Jervis. The highway distance from the box to the fire is about three miles. The two cities are connected by a single highway bridge.

In Port Jervis one 75-ft. aerial and six pumpers rolled to the box—to find nobody.

In Matamoras, one squad, and two pumpers—one a war surplus job—hustled to the dump. There they stretched in and wet down the blazing area surrounding the pesky burning trash, which was still spouting smoke next day.

In Port Jervis, firemen figured that a couple of excited boys seeing the blaze across the river, were impelled to pull the box in the mistaken idea that Port Jervis vamps could do something about it. But their courage must have failed them, for, with the racket of response on both sides of the river, they fled.

Thanks ROBERT WHEELER

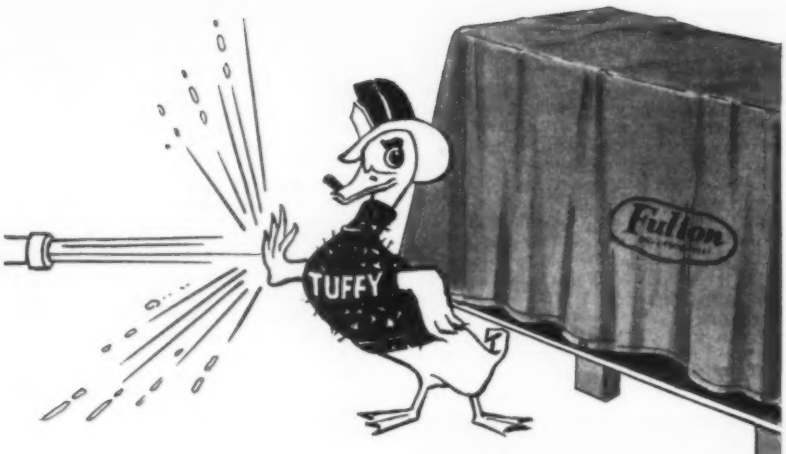
* * *

Up the Ladder of Success or—Orchids to the Firehouse Nursery School

A belated item is worth a line or two—and orchids to the East Meadow, L. I., Fire Department.

The Board of Regents in Albany, N. Y., granted a charter to the Firehouse Nursery School at East Meadow, L. I., even though it had forced the school several months before to move out of the firehouse from which it gets its name.

Started in November, 1953, as a small play group, the school has grown and



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LIGHT WEIGHT—Easily carried to source of water or fire area
NEOPRENE IMPELLERS—Pump dirty water as well as clean water—assure long life
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developed to a point where it won the praise of the State Education Department, which reported it "alert, enthusiastic and hard working."

The school originally was situated on the second floor of the volunteer firehouse. The Education Department objected to this location (even if the firemen didn't) so the school moved into a private house. However, for sentimental reasons, it decided to retain its original name.

Talk about your X-curricular activities for the vamps!

* * *

Preaching—and Practicing

The vamps of two companies of the Manhasset-Lakeville Fire Department on Long Island, rolled on the morning of June 9 to a Manhasset building occupied by a mail order firm.

The fire was one of those things: a matter of five minutes work. Luckily the time was 10:00 a.m. The incident could just as well have happened in the middle of the night, with serious results.

The cause was a five-foot high stack of packing case material, which had been piled up against the heating plant without thought that the plant might be used, even though 'twere June.

Folks may remember that chilly day. The Manhasset-Lakeville lads will remember the fire. Not for its ferocity, but the fact that the poor housekeeping, plus the day's unseasonable chill, which resulted in overtime work for the furnace, caused a nice little blaze, while it lasted. It was listed as "definitely poor housekeeping" for the occupant.

The name of that business occupant? "Aids for Good Housekeeping."

Fire officers lost no time suggesting (forcefully) that said occupants practice a bit of what they preached.

Thanks BEN BONNELL

* * *

Sausage and Spagel' Hot Stuff at L. 43

Until June 20, last, nobody could truthfully criticize the company chefs at Ladder 43, 240 E. 111th street, Manhattan. Their chow was all that a hard-working East Harlem, New York, fire company could ever hope for—sustaining, if not fancy.

One thing about the company's culinary hot-shots: they didn't confine themselves to the orthodox firehouse chowder. Not they. They were ever on the alert for something new to please the taste.

Hence it was that the trio of truckmen: Firemen Laidslaw Svoboda, Thomas King and Robert Borneman, decided the *piece de resistance* for the day would be spaghetti and Italian sausage, plus a bit of seasoning, to give it all a lift.

Brother Svoboda is quoted as saying none of the trio had ever tried out their *spaghetti a la firehouse* in a pressure cooker before, but since they had the device, why not give it a workout—you know, to provide that "lift" for the spagett'—and. So they did. And it did—provide the lift, that is.

While the trio were admiring the busy cooker at 1:15 P.M. (we hear tell there was some discussion over the hydraulics of the operation, and what the container would stand in the way of psi's) the cooker took off. So did the sausage and spaghetti, in fact, everything that was in the boiler!

Fireman King was standing near the stove when the blow came. Svoboda and Borneman were seated nearby. All were showered with sausage, spaghetti

and boiling water. King received first, second and third degree burns of face, right shoulder, arm and thigh. Borneman first, second and third degree burns of the back, neck and both arms; Svoboda received first and second degree burns of the right arm. He was relieved from duty. His less fortunate pals were rushed to Flower Fifth Ave. Hospital where they were held for treatment. Their condition was listed as "good."

Anybody wanna buy a slightly (?) used pressure cooker?

* * *

Another Case of Party Line Lunacy!

Readers who have expressed keen interest in the recent telephone "party line hog" case in Dutchess County, N. Y., in which a barn reportedly burned down because a fire warden was unable to induce a party line "hog" to relinquish the line so that he could report the fire, will be interested in a similar case which came to light in May.

According to press accounts, the circumstances were these: One of the children of Mr. Reginald Terrio on Chestnut Hull, East Hampton, Conn., found a cigarette lighter and ignited some clothes in a closet of the house.

The fire flared up but, fortunately, the parents were on hand and the children were all led outside, while Mrs. Terrio attempted to call the fire department.

Another caller, using the line, reportedly refused to yield it to the distracted housewife. Nor would the others do so on her second attempt to get priority.

About this time Mr. Terrio took over and his pointed and possibly blistering remarks succeeded in gaining for him sufficient time to enable him to get his call through to the fire department.

Firemen prevented the fire from complete involvement of the house but one room and children's clothing and furniture were damaged. No one, luckily, was injured.

Fire Chief Paul P. O'Connell of East Hampton instituted an investigation of the circumstances of the case. Thus far, no further particulars concerning the outcome have come across the "Watch Desk."

* * *

A 'Red Letter Date' for New Haven Firemen

June 28 last can be chalked up as a pretty easy date for New Haven, Conn., fire fighters.

Those on duty at West Battalion Headquarters had only to hook up a hose without stirring from their station to extinguish a fire in a truck. The truck driver accommodatingly brought the fire to them.

Things got a bit more rugged at First Battalion H.Q., however. Down there the lads had to go all the way across the street, and even up a flight of stairs, to snuff flames in two rooms of an apartment.

* * *

From Corn to Cotton, or "Picket Duty"

It doesn't occur often that Iowa cornhusker fire fighters are called upon to put out a blaze in, of all things, a cotton picker, but it happened last June. In Norway, Iowa, too, a long, long way from the "deep South, suh!"

No, they aren't harvesting any cotton crops from the fertile soil of the Norway community. What happened was that this particular cotton picker was one of two on a Northwestern flat car.

The freight car developed a hot box, which set fire to the floor of the flat car

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which, in turn, burned the tires and scorched the paint in one of the pickers.

The Norway Fire Department was called out at 1:45 A.M. and did a yoeman's job on the fire after the damaged flat car was set out from the train.

Thanks. BOB LEGRANGE

* * *

Hot Off the Tape

Town of Mamaroneck, N. Y., firemen joined with local police in trying to serve deportation summons on swarms, flocks, coveys, etc., of starlings. The "Bird Annoyance Detail" used fireworks and water streams to dislodge the pests with what are reported "questionable results." At any rate, it was all good exercise for the vamps. . . . 80 elderly or ill nuns were rescued, with only minor injuries to a few, when fire swept the infirmary at the Mount Carmel Convent, Order of the Blessed Virgin, in Dubuquesne, Iowa, on July 28. . . . According to press reports, a 5-year-old boy died July 31 in Plainfield, N. J., after he was overcomes by fumes from fluid while cleaning the upholstery in his father's car. Police said the boy was in the front seat of the car, parked in front of his home, and that the cleaning fluid was a carbon tetrachloride composition. . . . Camp counsellors led about 80 boys and girls in singing, August 2nd, as they filed from a burning recreation hall at Camp Roundax, about 7 miles north of Old Forge, N. Y. The 1½-story frame building was destroyed and the fire spread to a patch of woods. . . . In New York, a 9-year-old boy who threw a live firecracker at a child, was sentenced to five days but the judge let the boy pay a fine of $25 instead. . . . Speaking of firecrackers, in Rochester, N. Y., a firecracker exploded July 17 last—of all places in a car driven by Patrolman Lewis Pickett, who had completed his trick and was en route home. The officer grabbed Darryl Boyce, 17, who was sitting in a car with two other lads and found upon searching the car several hundred assorted firecrackers. Boyce, like our New York friend (?) was lucky. City Court Judge Sheehan suspended sentence on a discharging-fireworks-within-the-city-charge, and let the boy off with a lecture. Crackers were confiscated.

With Our Readers

Effective Fire Fighting Procedure

To the Editor:

With the ever increasing desire to improve the method of fire fighting, I thought you might be interested in the type of operation we use.

With the recent delivery of a new thousand gallon-per-minute pumper, equipped with a 500-gal. booster tank, with two booster reels of 150' of one inch booster hose on each reel and a 150' of 1½" preconnected hose, we have instituted a two-engine response for the people of Park Ridge, in the residential district.

On arriving on the scene of a dwelling fire with the new pumper, the two booster lines and 1½-in. line equipped with fog nozzles, using 200 lb. pressure at the truck, are brought into use at once, for immediate control and extinguishment of most interior fires. This opera-

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The "original" leather helmet, introduced by CAIRNS in the early 1800's, and steadily improved through the years since. Its specially-tanned top-grain steer hide and superior design make the "NEW YORKER" the safest, toughest, strongest, most durable helmet on the market.

The "SENATOR" No. 350

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The "CLIFTON" No. 900

Here are CAIRNS quality and experience embodied in a "plastic" helmet—a replica of the "NEW YORKER" in style, but molded in CAIRNS "Flint-Flex"—hard but not brittle, tough and flexible while still keeping its shape, light in weight, non-conducting, chemical-resistant.

The CAIRNS line also includes other helmets in drop-brim and other styles — in leather, aluminum and "Flint-Flex," and in other weights — all of standard CAIRNS QUALITY. We can supply everything the fireman needs for his personal equipment. Write for Catalog 351.

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tion is backed up by the arrival of a second pumper, ready to lay two 2½-in. hose lines with complete hydrant hook-up if necessary.

We put this operation in use at a recent dwelling fire in March. Upon arriving at the scene, smoke was seen billowing out from under the eaves and around the windows of the upstairs bedroom of a one-and-a-half story residence. The bedroom windows in the southwest corner of the house were stained dark brown from the heat and fire. We raised a ladder to cover the south window and a ladder to cover the southwest windows. We then pulled one booster line in the front door and up the stairs to the bedroom and closet involved, and the second booster line up the ladder to the south bedroom window and the pre-connected 1½-in. line into the southwest bedroom window, ventilated, let the rush of super-heated air out and opened the above-mentioned lines using the fog nozzles into the room involved. Needless to say, the fire was out within a few minutes, using only 125 gals. of water. This also included the wetting down of attic beams, which had also partly become involved. Our second pumper was not needed.

A good many departments are guilty of depending on a small booster to extinguish an interior house fire, with an inadequate booster supply, rather than take the time to lay lines and hook-up. Our method has been in practice for the past few months and found to be very satisfactory for fires of this nature, and with a minimum amount of fire and water loss damage to the home owner.

NORMAN A. BROWN
Chief of Fire Department
Oak Ridge, Ill.,

Culver City Gets Improved Rating

Culver City, Calif., was given a new rating from a Class 5 to Class 4, following a survey of the city's fire defenses by the Board of Fire Underwriters of the Pacific.

The new rating was announced by Joe Silveira, manager of the Southern California office of the board and John Colton, district engineer.

Silveira said the Class 4 Rating will drop average insurance rates on dwellings and habitational units anywhere between 7.7 and 21 per cent. Rates on contents in this classification will decrease on an average from 4.3 per cent to 16 per cent.

Silveira also said rates on masonry-mercantile buildings will drop an average of 26 per cent and 16 per cent on the contents while the rates on frame mercantile buildings will be reduced between 26 and 27 per cent and by 18 per cent on the contents.

Colton attributed the new rating to an overall improvement in the city's fire defenses. The Southern California Water Company recently installed a large water tank, thus increasing supply and pressure for fire use.

Colton traced the rating history of Culver City from 1929 when it was given a Class 5 and he paid high tribute to Fire Chief John W. Kearney's work.

"Chief Kearney, who took over the post shortly after the war, is an example of the new trend in fire department administrators," said Colton. The board's next survey was in 1949 but the city was growing faster than municipal agencies could cope with and the rating miraculously remained unchanged.

The new rating actually does not tell the full story of the improvement in Culver City's overall fire defenses. Like nearly all other Southern California communities, it has been growing at a phenomenal rate.

Chief Kearney said the city's rate of growth now appears to be reaching its zenith with no further geographical area about to be annexed. He said the overall planning in the future would shoot for Class 3 Rating.—PAUL DITZEL.

Fire Truck Takes Off Alone

When the alarm sounded in the Cooksville, Ont., Fire Station recently, the town's fire truck started off on its own just like the old fire horse used to.

Several of the firemen were out in front of the fire hall. The fire phone rang, and at the same time the motor of the truck started up. The truck was in gear, and it ran forward, smashing the overhead door which was closed, and headed out into the street. Asst. Chief Jerry Sproule and Fireman Fred Deinhart were out in front, and jumped on the truck and stopped it before it reached No. 5 Highway. It appears there was a "short" in the starter circuit. The fire alarm was a false one. Chief Jack Braithwaite had the boys repair the door and all is well now.

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Convention Dates

Sept. 19-21—ANSUL FIRE SCHOOL. To be held at the Ansul Chemical Company's test field in Marinette, Wis. For information, contact Director Fire School, Ansul Chemical Company, Marinette, Wis.

Sept. 19-22—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual meeting, Omaha, Neb. For further information contact Chief Daniel B. Tierney, Secretary-Treasurer, 8 Robbins Road, Alington 74, Mass., or the Headquarters Office, Hotel Martinique, Broadway at 32nd Street, New York 1, N. Y.

Sept. 24-25—OLD FORGE FIRE SCHOOL. Annual meeting, Old Forge, N. Y. For information contact W. Lewis Armstrong, P. O. Box 186, Old Forge, N. Y.

Sept. 25-30—CALIFORNIA STATE FIREMEN'S ASSOCIATION, INC. Annual meeting, Avalon, Santa Catalina Island, Cal. Secretary, E. L. Albrecht, St., 1320 N Street, #301, Sacramento 14, Cal.

Sept. 26-29—INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual meeting, Rochester, N. Y. For information, contact the Association at 130 West 42nd Street, New York 36, N. Y.

Sept. 26-30—PENNSYLVANIA FIRE SCHOOL. Advanced Fire Fighting Course, to be held at the new Pennsylvania Fire School building, Lewistown, Pa. For information, contact Edgar A. Spotz, Adviser, Fire Service Training, Public Service Institute, Box 911, Harrisburg, Pa.

Oct. 3-5—FIRE PROTECTION AND INSURANCE SECTION, ASSOCIATION OF AMERICAN RAILROADS. Annual meeting, Baltimore, Md. For information, contact W. E. Todd, Secretary, Fire Protection and Insurance Section, Association of American Railroads, 59 East Van Buren Street, Chicago 5, Ill.

Oct. 10-14—PENNSYLVANIA FIRE SCHOOL. Fire Apparatus Operation and Maintenance Course, to be held at the new Pennsylvania Fire School building, Lewistown, Pa. For information, contact Edgar A. Spotz, Advisor, Fire Service Training, Public Service Institute, Box 911, Harrisburg, Pa.

October 11—MAINE ASSOCIATION OF FIRE CHIEFS. Annual meeting, Lewiston, Me. For information, Contact Chief Z. F. Drouin, Fire Headquarters, Lewiston, Me.

Oct. 14-16—DELAWARE COUNTY FIRE SCHOOL. Annual meeting, Essington, Pa. For information, contact Chief Russell P. Wentzel, Director, Fire Headquarters, Lansdowne, Pa.

Oct. 16-18—TEMISKAMING FIREMEN'S ASSOCIATION. Annual meeting, Kirkland Lake, Ont. Secretary-Treasurer, T. H. Whitman, P. O. Box 331, Noranda, Que. Reservations should be made to George Roberts, Kirkland Lake Volunteer Fire Department, Kirkland Lake, Ont.

Oct. 17-19—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. Annual meeting, Grand Island, Neb. Secretary-Treasurer Russel D. Salak. Box 312, Schuyler, Neb.

Oct. 17-20—KANSAS FIRE SCHOOL. Annual meeting, University of Kansas, Lawrence, Kans. Director, Gerald Pearson, Director of Extension Classes, University of Kansas, 111 Fraser Hall, Lawrence, Kans.

Oct. 17-21—PENNSYLVANIA FIRE SCHOOL. Standard Fire Fighting Course, to be held at the new Pennsylvania Fire School building, Lewistown, Pa. For information, contact Edgar A. Spotz, Adviser, Fire Service Training, Public Service Institute, Box 911, Harrisburg, Pa.

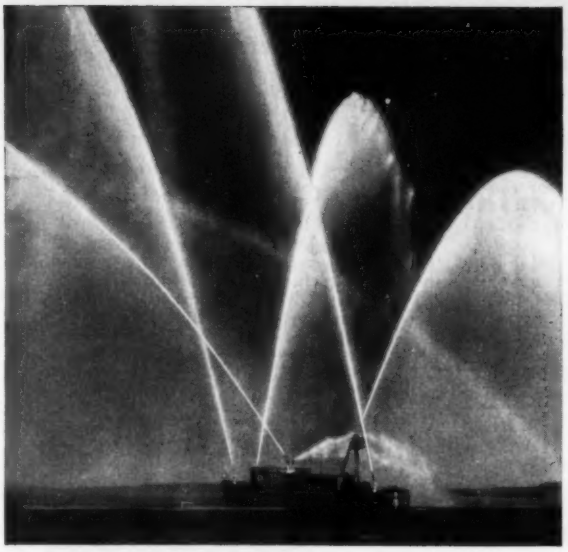
October 18—MAINE FIRE CHIEFS' CONFERENCE. Annual meeting, LeMontagnard Snowshoe Club Rooms, Lewiston, Me. For information contact Chief Zephrin F. Drouin, Fire Headquarters, Lewiston, Me.

Oct. 20-22—ARIZONA STATE FIRE TRAINING SCHOOL. Annual meeting, Phoenix, Ariz. For information, contact Battalion Chief Jake Siken, Fire Fighting Instruction Supervisor, Phoenix Fire Department, Phoenix, Ariz.

Oct. 24-28—PENNSYLVANIA FIRE SCHOOL. Advanced Fire Fighting Course, to be held at the new Pennsylvania Fire School building, Lewistown, Pa. For information, contact Edgar A. Spotz, Adviser, Fire Service Training, Public Service Institute, Box 911, Harrisburg, Pa.

Oct. 27-29—INTERNATIONAL FIRST AID AND RESCUE ASSOCIATION. Annual meeting, Alexandria, Va. For information, contact International Association of Rescue and First Aid Squads, P.O. Box 2098, Potomac Station, Alexandria, Va.

November 20—MARYLAND FIRE CHIEFS' ASSOCIATION, INC. Annual meeting, Baltimore County Fire Headquarters, Towson, Md. For information, contact Chief Lee Cockey, Towson 4, Md.



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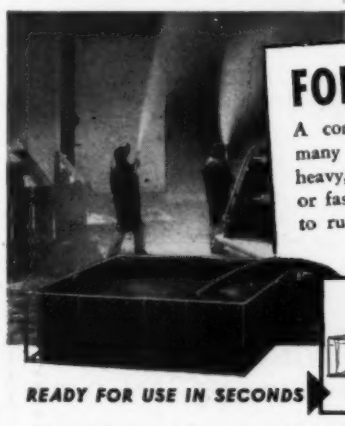

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Persons in the News

Hurton New Wakefield Chief

Lieut. William P. Hurton a Wakefield, Mass., fire fighter for the past 25 years, was named Chief of its Fire Department by the Board of Selectmen Aug. 2, 1955.

Although the new chief did not top the Civil Service examination list, the Board selected him because of his length of service, and his administrative ability.

Chief Hurton was appointed a call man in 1930 and a permanent member of the department in 1947. The day after his appointment, the new chief was called upon to fight a serious flash fire in the Nevlen company which destroyed the roof of the building and ruined much of the contents.

Hardin Chief of Carlsbad Department

Robert Hardin has been elected permanent chief of the Carlsbad, Calif., Fire Department, a post he has held as acting chief for three years.

Hardin's election by the members of the volunteer department was confirmed by the Carlsbad City Council. He is a water company construction superintendent.

PAUL DITZEL

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Montecito Chief Ensign Feted

Fire Chief G. Herbert Ensign who joined the Montecito, Calif., Fire Department in July, 1925, was feted July 4th last, by twenty-five of his fellow fire-fighters, together with fire and civic officials, at a barbecue celebrating his 30-year service.

The popular chief was presented with a gold wrist watch by Battalion Chief Norman Vincent, in the name of his fellow smoke eaters. Present among the honoring guests was former Fire Captain, Arthur Wright, only living retired member of the department.

The Montecito Fire Department comprises two stations—one brand new, a squad company, two engine companies and a reserve company made up of off-shift men. The Chief took command of the department May 1, 1932.

Chief P. P. Zarada Now County Fire Inspector

Peter P. Zarada, ex-Chief of the Franklin Square and Munson Fire Dept. (Long Island, New York) has been appointed to the position of Fire Inspector for the County of Nassau.

Mr. Zarada has been a member of the International Association of Fire Chiefs for over ten years. He is also a member of the Nassau County Firemen's Association, the New York State Association of Fire Chiefs, the Firemen's Association of the State of New York and the Seventh Battalion Chief's Council. He was originator of the Fire Training School in Franklin Square, in which he is still an instructor, and was instrumental in setting up the Fire Prevention Bureau in the town. He has also given much time to the Civil Defense. During World War Two he was head of the Auxiliary Firemen, and until his appointment as Inspector, held the position of Zone Chief.

Chief Ulrich Now Fire Consultant

Chief Sidney H. Ulrich, who recently withdrew as Chief of the Peoria, Ill., Fire Department, has established an office as Fire Protection Consultant at 1107 Kansas, Peoria 4, Ill.

He has been succeeded in the Peoria Fire Department by Chief Ray Miller, whose service in that organization has passed twenty years.

Fire Engineers Elect Silveira

Joseph T. Silveira was elected president of the Southern California Chapter, Society of Fire Protection Engineers at a recent meeting.

Other society officers installed include: A. W. Swanson, first vice president; L. A. Walling, second vice president and Marshall Somerville, secretary-treasurer.

—PAUL C. DITZEL

Promotions for L.A. Area Officers

Numerous promotions in Los Angeles City and County Fire Departments were made after beginning of the new fiscal year July 1.

L. A. County Fire Chief K. E. Klinger

announced promotion of Battalion Chiefs Victor Petroff and William H. Weyant to assistant chief rank. Chief Petroff will head the Construction and Research Division while Chief Weyant will command field Division II.

Four captains, R. E. DePue, George Brunton, Parker Haraden, and George Reichert were promoted to battalion chief rank.

L. A. City Chief John H. Alderson promoted Captains William W. Johnston, Jr., Thad T. Whippo, and George S. Pinckney to battalion chief rank.

Chief Alderson also announced formation of the L.A.F.D.'s 16th battalion and assignment of Battalion Chief A. F. Fowler to full-time duties in Civilian Defense.

—CLIFF DEKTAR

Chief Jos. Waterman Retires

Fire Chief Joseph Waterman who has headed the Toronto Fire Department during the past few years, retired from service on September 1st.

On August 12th he rounded out 49 years of service in the Toronto Fire Department.

Toronto's Deputy Fire Chief Leonard Leigh has been named to succeed Chief Waterman. Chief Leigh has held the post of Deputy Chief for the past three years, and has been with the department for 42 years.

—JOHN KARL LEE

Book Shelf

Pipe Friction Manual.—Published By The Hydraulic Institute, 122 East 42nd Street, New York 17, New York. Size 8½x11 inches; paper bound; 87 pages; Price $1.75 Domestic, $1.85 Foreign.

Material in this manual is an extension and rearrangement of the pipe friction data contained in an earlier publication entitled, "Tentative Standards of the Hydraulic Institute—Pipe Friction."

These data are based on the latest information available. The form of the Manual follows a pattern developed as the result of numerous suggestions from users of the earlier publication.

The Manual features a section demonstrating the mathematical calculations used in the construction of later charts. This is supplemented by complete tables of friction loss for water in feet per one hundred feet of pipe. Wrought iron, steel and cast iron pipe sizes from ⅛ inch nominal to 84 inch I.D., are covered. Given also, are tables of resistance coefficient for valves and fittings, 90 degree bends, diffusers, and others. The tables of resistance coefficients for valves and fittings include the latest available experimental data and show the valves in more detail with respect to size and type than has heretofore been published.

Of particular utility are numerous examples showing actual mathematical solutions to pipe friction problems. These have been checked and clarified to the point where the volume not only has become an essential tool for hydraulic engineers but it is also an excellent text of assistance to college instructors and students.

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charts, roughness factor charts, viscosity tables and associated information, the Pipe Friction Manual is a most complete and workable treatise on the subject. The Manual also includes a full list of the references showing the sources of the data. It should fill a long time need for a thorough and authoritative handbook on pipe friction.

I SMELL SMOKE. By Paul W. Kearney. Pub. by Simon and Schuster, New York, 1955; 16 Chapters; 215 pages; board cover. Price $3.00.

The author, Paul Kearney, is no stranger to readers of FIRE ENGINEERING. Some of his earliest literary efforts were published in this journal.

Although written primarily for the general public this text, like his other books such as "Disaster on Your Doorstep" (Harper & Bros.), and his articles in various magazines, is packed with factual data for the fire fighter—professional and volunteer.

Paul Kearney knows his fire fighting and his fire fighters. This, his latest volume, bears heavily on preventing fires, and tragedies that result from fires, with emphasis on the home. It explodes the theory of some that fire departments can be judged by per capita losses in their respective cities. It presents documented proof of how many cities have cut fire losses within a single year by adopting the latest inspection techniques. And in plain language it spells out what Mr. and Mrs. John Q. Citizen can do to prevent fires, and to fight them when, and if, they happen.

The author takes a haymaker at careless smokers; at "torch" clothing and furnishings; at poor housekeeping, and worse house building. Other questions discussed are lightning fires; automobile fires; what makes fire start, and spread; and the kind of fire detection and extinguishing systems available for detecting fire and calling the fire department.

Fire officers in particular, who are looking for live ammunition to spark their fire prevention campaigns, will find a magazine-full of it in "I Smell Smoke."

Annual Reports Received

Nassau County, N. Y., Fire Marshal Reports

Few of the Nation's County Fire Marshals issue a printed Report of activities, which makes that of the Nassau County Fire Commission, George Clough, Marshal, all the more interesting.

The Report for the year 1954 sets forth the set-up of the Commission; the Marshal's Office reviews fire investigations, fire causes and losses; and gives data on inspections of various occupancies.

* * *

Charlotte Losses Sharply Up for '54

Fire losses for the City of Charlotte, N. C., in 1954 amounted to $1,288,483.88, or almost again as much as the next highest year, 1953, according to the Annual Report for 1954, Chief Donald S. Charles. There were 2,758 alarms.

Among the recommended improvements stressed in the excellently prepared Report are: Erection of a new station in the northwestern part of the city; replacement of one station, with a new house; new and larger quarters

to house the Mechanical Repair Division and Woodworking Division; enlargement of Station 7 with another company; also No. 4; and the addition of office space at Fire Headquarters.

* * *

Honolulu Alarms Down—Losses Up

Although the Honolulu Fire Department, Chief H. A. Smith, responded to 418 fewer alarms in 1954 than in 1953, the fire losses soared to a new high, exceeding $1,200,000—almost triple the figure of the year before.

Of the 198 false alarms received, 53 were by telephone and 145 by box. Of the latter, 63 were caused by minor temporary defects in master boxes or their affiliated sprinkler systems. Chief Smith points out that injuries from fireworks continue to be heavy, and children and matches remain a deadly combination.

* * *

Canada Issues Statistical Fire Loss Report

The 33rd statistical report of the Canadian Department of Public Works, Fire Prevention Branch, C. A. Thompson, Dominion Fire Commissioner, is published in both English and French. It summarizes and classifies the 67,519 Provincial fires for the year 1953, in which the aggregate property loss amounted to $84,270,896—a per capita loss of $5.70.

This compares with 64,103 fires, resulting in $80,902,205 loss, and a per capita loss of $5.61, in 1952.

Fatalities from fire were 477 in 1953 compared with 562 in 1952 with the highest proportion among children.

* * *

Fire Control 'Big Business' in Detroit

It cost the City of Detroit in 1954 the sum of $11,136,871.00 to hold its fire losses to $7,570,128. But no one can deny it was a good investment. The property in which fire occurred had a valuation of $387,161,689, according to the Annual Report of the Detroit Fire Department, Chief Edward J. Blohm, for the year 1954.

During the year 220,446 alarms were received, a decrease of 3,137 from the year previous. Of these, 2,185 alarms were listed as "false," 1,976 of them classified as box alarms; and 208 false telephone alarms.

During the year the department rolling stock of all types made 55,321 runs; traveled 152,622 miles, and suffered 124 motor vehicle accidents.

In his report, Chief Blohm pays this credit to fire department radio: "Two-way radio mobile communications equipment was utilized to the greatest extent possible. The use of the 137 mobile sets continued to provide greater mobility, efficiency and versatility. Considerable savings were again effected through the elimination of unnecessary mileage made possible by the constant contact with all vehicles. . . ."

* * *

Chief Hydaker Puts Recommendations First

Whereas most fire department annual reports list the recommended improvements (when they do include them) in the rear of the document, the Lima, Ohio, Annual Report, issued by Fire Chief Walter L. Hydaker, starts right off with the recommendations.

In the 1954 publication, the National Board's report on Lima is referred to as a reason why manpower should be increased and one ladder and three pumper companies added.

If persistency pays, Chief Hydaker will be rewarded for repeatedly calling attention in his Annual Reports to the need of repairing existing fire stations and installing other needed improvements.

In 1954 the department responded to 536 alarms, or 147 less than in 1953. Total fire loss for the year amounted to $221,621.

* * *

Atlantic City F.D. Responds to 824 Alarms

The total number of alarms received by the Atlantic City, N. J., Fire Department (Chief Zenus Mathis) for 1954 was 824. Of these, 687 were for actual fires. False alarms amounted to 78—53 by box and 25 by telephone. There were 59 "unnecessary" alarms. The department was called 109 times for work outside the city. Total fire losses were $840,043.05, with property at risk amounting to $58,748,902.

* * *

Manila Tie F. P. Week to Civil Defense

For some years, the Manila, P. I., Fire Department, Chief Cipriano Cruz, has published a comprehensive booklet crammed with facts about the need of preventing fire, and the work of the Manila Fire Department. This year's booklet is captioned "Prevent Fire for Civil Defense."

The booklet has 65 pages and cover, and contains personal messages from Ramon Magsaysay, President, Philip-

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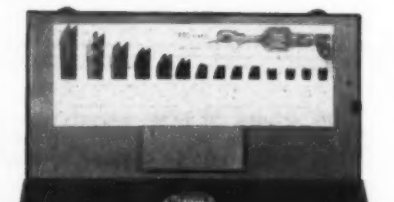

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pine Islands; Arsenio H. Lacson, Mayor of Manila, and Chief Cruz. It has chapters on civil defense; home inspections and fire prevention measures; industrial fire protection; school fire safety; hazards of transporting flammables; fire extinguishing agents; arson and hazards of gas installations.

The publication also contains the fire record of the City for 1954, including details of loss of life, and a chapter on first aid treatment. It is profusely illustrated with photographs and diagrams.

* * *

City of Chester (Eng). Calls Increase

Fire calls in the area covered by the City of Chester, England, Fire Brigade were 338 in 1954 compared with 354 for the year before. Of these, 225 were within the city area, 123 beyond the area, in Cheshire and Flintshire. The estimated direct fire loss within the city area was £9,976 or an increase of £5,996 over the year 1953.

Mr. C. V. J. Avery, M. I. Fire, E., Chief Fire Officer reports growing interest in automatic fire alarms for commercial, industrial and other occupancies.

* * *

Worcester City and County (Eng.) Uses H.P. Fog

Frontispiece of the Seventh Annual Report of the Worcester City and County (England) Fire Brigade pictures a "composite appliance" of the Brigade, a feature of which is the use of high pressure fog with 'gun' type nozzles, similar to those used in this country.

According to G. Eastham, Chief Officer of the Brigade, between April 1, 1954, and March 1, 1955, fire calls increased 268 over the year previous total of 1,524 with total fire waste in the county of £26,184,000. Chief Eastham also strongly urges installation of automatic fire alarm systems—even in dwellings.

An interesting tabulation within the report sets forth the time elapsing between time of discovery and time of call to the Fire Brigade. The Report does not indicate how these data are verified, but the following table should be of interest to FIRE ENGINEERING's readers:

Times Elapsing Between Time of Discovery and Time of Call to Fire Brigade

0— 5 minutes inclusive	533
6—15 minutes inclusive	152
16—30 minutes inclusive	33
31—45 minutes inclusive	1
46—60 minutes inclusive	7
Over one hour	37

* * *

Fort Worth Fire Loss $1,342,948.89

According to the 1954 Annual Report of the Fort Worth Fire Department, Chief P. C. Fontaine, there were 5,080 alarms received that year, of which 4,456 were for actual fires; 268 false alarms; 233 classed as "honest mistakes"; 25 for multiple alarms; 50 out-of-city calls, and 48 "sprinkler system out of order."

During 1954, the department apparatus rolled "628,398 blocks" and were in service 5724.58 hours.

* * *

Salt Lake City Has Low Fire Loss Record

Fire losses for the year 1954 in Salt Lake City were $272,766, a drop of $30,316 from 1953, according to the Annual Report of the Salt Lake City Fire Department, Chief J. K. Piercey.

Early discovery and reporting of blazes, together with the department's training program account for the low

loss, according to the Chief.

It is interesting to note that this department has acquired compressed air and oxygen masks to equip nearly all firemen on duty with one. Wet water also is being used, as are large scale fog nozzles and chemical foam equipment.

Salt Lake City is another department that uses deodorant chemical to reduce smoke losses.

* * *

Austin, Tex., Issues Comprehensive Report

The 1954 Annual Report of the Austin, Tex., Fire Department, Chief J. E. Woody, is proof that an artistic, comprehensive, interesting accounting of fire department makeup and operation is possible even though in mimeographed and offset printed form. The document contains excellent promotional as well as statistical material.

Last year's fire losses amounted to $388,774.91 with property at risk valued at $7,641,271.00. There were 2,005 alarms, of which 1,318 were for actual fires, 365 of them in buildings. There were six deaths and 45 injuries (4 of firemen) from fire. Operating costs were $735,634.67.

* * *

Colorado Springs Fire Loss $.64 per Capita

Fire loss for the year 1954 in Colorado Springs, Colo., according to the Annual Report of the Colorado Springs Fire Department, Chief F. H. Lausch, amounted to $35,020.96 which, based on population of 55,000, amounts to $.64 per capita.

During the year the department responded to 502 alarms, of which 40 were false and 17 outside of the city.

* * *

Alarms Down—Losses Up in Santa Barbara

According to the Annual Fire Record of the City of Santa Barbara, Calif. (Chief C. L. Tenney), for the year 1954, the department responded to 571 alarms, compared to 752 for the year 1953, with losses last year amounting to $51,758.56 compared with 1953 loss of $36,651.97.

The report details the miscellaneous equipment used on fires, one item being "Smoke Ejectors" (used) 130 times for 36 hours-9 min." The department goes in heavily for fire prevention work, with property inspections right up front.

* * *

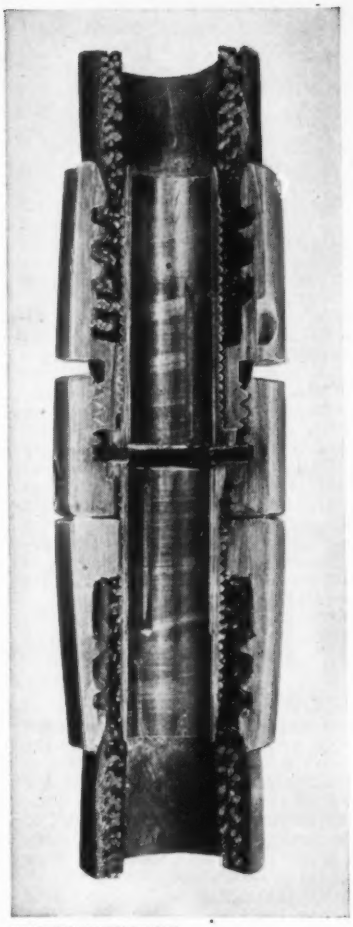
Small Booklet, Big in Facts

The Columbus, Ohio, Fire Department has issued a little booklet (18 pages fits a business envelope), the purpose of which is two-fold. First to acquaint Columbus folk with the service performed by their fire department; secondly to invite cooperation of citizens with their fire force in preventing fire. It's a wee bit booklet, but big in vital information and suggestions. It ought to prove a good "sales agent" for the Columbus Fire Department (Chief W. G. Strickfadden, and Chief J. H. Cassell head of the Bureau of Fire Prevention).

* * *

Reading Mass., Reduces Losses

According to the Annual Report of the Town of Reading, Mass., fire losses in 1954 were reduced $15,134.23 from the year previous. The department answered 93 bell, 171 telephone, 14 verbal and 15 radio alarms. There were 88 building fires. The Town Fire Department aided other communities on 16 calls and asked for help in 12 instances. The chief, Hugh L. Eames, is also forest warden and superintendent of fire alarm. He urges additional installation of two-way radio.



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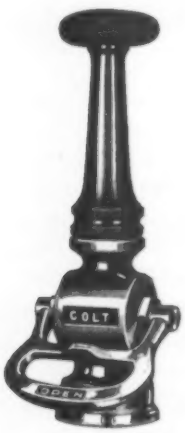

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Power Tools

(*Continued from page* 846)

fires as the Cunard Pier in New York City; the Miami Herald building, Miami, Fla.; the Reading Terminal building, in Philadelphia and others, should already have convinced most of our readers of the wisdom of owning and operating their own power facilities for performing such tasks and not having to depend upon public utility or other interests for such equipment. Yet today, strangely enough, only a small percentage of municipal fire departments can boast of their own compressor and jackhammer units.

And let it be reiterated: it isn't always the fire emergency that calls for application of such equipment; such powered tools and equipment are priceless in times of building collapse, hurricanes, floods, train wrecks and the like. A further good point about these compressors is that they can be used to power other devices than pavement breakers. It is true that they may not be called into action very frequently but when they are, it is usually for a genuine disaster. Having such equipment immediately available may spell the difference between a serious and a minor catastrophe.

Now that we are considering air powered tools, let us look further into these.

Air Movers

The first successful application of compressed air to fire department tools and equipment was accomplished by the late Edward Lamb, one time Captain in the San Francisco Fire Department and inventor of the Lamb Air Mover. That department installed what is believed to be the first air compressor fire company, with air operated tools and other devices, in 1938.

Captain Lamb showed air-powered emergency tools at the San Francisco Conference of the International Association of Fire Chiefs the year after and this demonstration so interested Fire Chief Barney Houston, of Cincinnati, Ohio, that he determined to add an air unit to his department. This was done, notwithstanding difficulties imposed by the war-time priorities and other handicaps of production.

Finally, a sedan type squad truck was built by the Seagrave Corporation to Chief Houston's specifications and, after satisfactory acceptance tests, was placed in operation in 1942. The story of this interesting "Airmatic Task Unit" as it came to be called, was told in detail in FIRE ENGINEERING of December, 1942.

The Lamb Air Mover, a venturi-like device that is used to eject smoke and fumes, also was described in the series of articles on Ventilation by the author.

Besides the "Air Mover" the Airmatic Unit carried such air-powered equipment as the following: Portable safety-saw, with three 12-in. blades, capable of cutting to a depth of 4-in.; portable air drill, to drill a 3¼-in. hole through a 12-in. concrete or brick wall; and various jack rods and bits. Demolition tools included medium and heavy duty pneumatic breakers and accessories; heavy type core breakers, etc. In addition there was a portable generator, with various flood lights, etc., and a complete assortment of manually operated rescue tools and devices.

This unique unit is still in active service in the Cincinnati Fire Department and reportedly has justified many times

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And the cost? Well within the budget of any fire services or institutions. Don't be without this valuable form of fire insurance for another day. Order from your jobber or write direct. DO IT NOW!

6,300 human lives lost through fire in 1954 — countless horses and livestock — millions in property.

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over the confidence Captain Lamb and Fire Chief Barney Houston placed in compressed air units for certain fire force operations.

Although it must be admitted that air-powered equipment has broader applications for fire fighting and rescue work than the average fireman is aware of, its use will be somewhat restricted in scope because of the limitations between source of supply—the air motivating power—and the point of application. Further, it is difficult to fashion certain types of manual tools to air power, but which can be made to operate by electricity.

Adaptability Features Electrically Powered Tools

Electrical power for tools and appliances has shown ever-widening application since fractional-horsepower electric motors became available. The advent of the light but powerful portable electric generator greatly furthered these applications, and brought them within range of fire service requirements. Today some sort of electric high-speed tool has been devised for almost every manual chore imaginable, to quote Maurice H. Reid ("How to Use Portable Power Tools").

Electrically-driven facilities can draw their life-power from portable generating plants or from the permanent public utility service.

The modern portable electric generator is a marvel of efficiency when it comes to providing power and light for the fire service. It does other things, too, like pumping water, and removing smoke and fumes, but we are concerned in this study with the mechanics of electric power as applied to appurtenances that will do the cutting, drilling, boring, ripping and other operations, previously mentioned as essential to various basic fire suppression and rescue operations.

Without becoming too technical, let us briefly review some of these devices, and their applications.

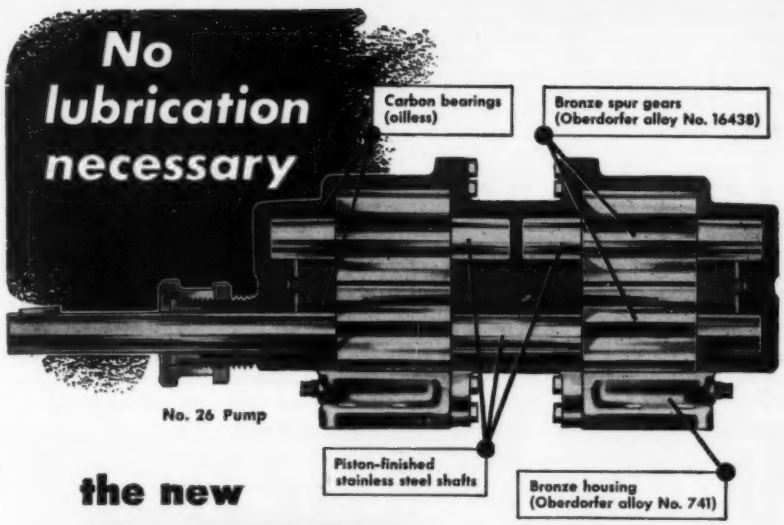
Portable Power Saws

There are several types of electric, gasoline and air powered saws: the plain electric motor driven saw, which comes in a number of types and prices; chain saws, which are powered by gasoline and electric motors and which likewise come in a variety of types, sizes and horsepowers.

The latest portable electric saw reportedly will cut across a 1 x 10-inch plank in one-half second. While a hand-saw workman is picking up his saw, the job is already done by this new work saver.

The size of this type of saw is rated by the diameter of the circular blade that it uses. Since the blades of the saw are quickly interchangeable for cutting all kinds of material and for all kinds of cuts, there are no designations of the machine itself as there are with ordinary hand saws. Electric saws range from the small 4-inch blade up to the heavy-duty 10- and 12-inch blades for heavy-duty work. Motors are preferably the universal type (AC-DC) of about 115 volt, to run in the neighborhood of 4500 RPM load speed (this is the speed of the average 8-inch type). All forms of cutting are possible by changing the blades.

A recent and popular newcomer among power tools is the chain saw. Its successful use by foresters and lum-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The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

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bermen led to its adoption by the fire service, where both the electrically and gasoline operated one and two-man varieties are giving excellent accounts of themselves.

Recently the gasoline-powered, one-man chain saw has gained popularity among fire fighters. The Salt Lake City Fire Department, for example, uses a saw weighing 17 pounds, which cuts to a depth of 14 inches. It will make these cuts through solid timber or logs of this diameter in 30 to 60 seconds.

Other chain saws are available in various sizes, up to a portable unit weighing 45 pounds, which will cut to a depth of 36 inches. There are a number of excellent makes of these power saws, and the manufacturers should be consulted as to the uses the fire department may desire to make of them.

Many fire departments have found that these chain saws are taking the operators through flooring, roofing, timbers and so on, much faster than the circular hand saws; that they make cuts in hardwood with ease that normally binded on the circular saws, and they cut any depth up to 14 inches as compared with the limit of 2 to not over 4 inches possible with circular saws.

The one-man, lightweight electric chain saw reportedly can cut any timber from a sapling to a tree 28 inches in diameter, and can be used in places where (power being available) a heavier tool would be unmanageable.

The chipper chain saw runs at 1400 feet-per-minute. The 10-ampere motor provides power for the toughest jobs, it is said. A No. 14 gage wire is recommended up to 100 feet; No. 12 up to 150 feet, and No. 10 up to 250 feet. In cases where the saw is needed beyond the reach of an electric outlet, a 1500-watt generator is available (as it is, of course, for most of the light electric tools now on the market).

The electric chain saw is light enough and so well balanced that it can be used in any position. It weighs only 18 pounds.

Rotary Cutter and Borer

To help locate inaccessible fires and reach them with hose streams, as well as to facilitate water removal and salvage operations, the fire service now has available a rotary cutting tool of new, revolutionary design. It was originally designed for cutting holes in heavy construction, including pier decks, and was adapted by the fire service to meet its own needs.

The O'Brien Rotary Cutter, as it is known, is an electrically powered tool, weighing about 47 pounds. It uses a Stanley Universal Drill #805 and has a 1⅓ H.P. standard AC-DC-Universal electric motor, drawing 12.5 amperes, which operates the tool at about 200 R.P.M. without load, or 125 R.P.M. with load, in the same manner as the conventional electric drill, with certain modifications.

The cutter consists of a shank having a 6½-inch diameter disk face plate. This is fitted with two high carbon, steel alloy cutting blades having approximately 2 inches of cutting surface. A radius cutter bit extends about 3/16-inch. Directly below the face plate is attached a 1¾-inch "pilot" drill about 11 inches long, made of carbon steel. This provides an axis about which the face plate revolves. To eliminate cuttings from choking the cutting members or drill, a radius cutter bit extends about 3/16-inch below and beyond the overall diameter.

When the desired spot has been found at which the opening is to be made, the cutter is operated. Where use of a distributor is desired, a single 6½-inch hole is sufficient. If cellar pipes are desired, two overlapping holes are necessary. Several overlapping openings can be cut to permit use of large pipes or distributors. Power is supplied by portable generator or by tapping into street light poles, or other permanent sources of electricity.

There are a number of smaller, portable electric drills which are adaptable for fast, light cutting such as might be required in aircrash and auto wrecks. In addition to wood drills, there are presently being used concrete drills, nibblers, and various hydraulic power tools including rams and pumps. They make possible cutting through concrete and masonry, metal, brick and other materials. They can be carried and assembled at the scene by two men, and it takes but one man to operate these tools, with a minimum of fatigue.

Electric jack hammers operating off of modern portable generators are capable of cutting through heavy concrete, no less than the pneumatic type, and have proved a fast, easy method of breaching brick walls, concrete floors, releasing barred windows, and so forth.

Then, there are the portable metal cutting tools which are being used to penetrate corrugated iron, to cut into metal transports and aircraft, to remove

Fight Fires Faster!

with the DUAL FIRE FIGHTER

DIRECT PUMPING

AS A BOOSTER

Use the Dual Fire Fighter direct when truck pumper is unavailable.

Prevents costly damage to valuable equipment . . . extends your pumper truck range as much as 300 feet . . . reaches otherwise inaccessible water sources.

When fire strikes — prompt, sure action is an urgent necessity, and water is often inaccessible to the truck pumper because of trees, fences or other obstacles.

Two men carry the 162-pound Gorman-Rupp Dual Fire Fighter. Fighting a fire directly, or filling a vital need as a booster pump, the Gorman-Rupp Dual Fire Fighter starts throwing water in less than one minute.

Write for Bulletin No. 9-FD-11

GORMAN-RUPP PUMPS

THE GORMAN-RUPP COMPANY

MANSFIELD, OHIO

hinges and hasps from doors, and in many other applications.

It should be mentioned that while electrical tools powered by generators are in operation, effective lighting of the fire ground is also possible. Many departments operate 2,500-watt generators which will operate two 500-watt flood lights at the same time the chain saw, or other device of similar power is being used. Also, as was pointed out in the author's series on ventilation, power generators provide an effective means of ejecting smoke, and injecting fresh air.

This is by no means the complete inventory of modern power-activated tools and equipment available to the fire service to mechanize fundamental time-consuming, labor-taking operations. There is no telling what tomorrow will bring forth.

New York Apparatus Gets Full Right-of-Way

Fire apparatus in New York City now has the right-of-way *returning* from as well as *going* to fires. Fire Commissioner Edward F. Cavanagh, Jr., announced the policy early this summer as the first step in a drive to enforce observance of traffic laws.

Fire equipment responding to emergencies has had the right of way; the order extending the provision to apparatus *returning* rescinds a directive of 1953, requiring that rolling equipment observe traffic signals when returning to quarters.

The old orders, according to Mr. Cavanagh, created "an undesirable situation" in some areas of the city where fire engines remained standing at red lights when there was no other traffic. He predicted the new measure would reduce traffic accidents.

The new order called upon firemen operating apparatus to "drive with due regard for the safety of all persons using the streets." The only exception to the new ruling will be when operators of fire engines face "impenetrable congestion" when returning to quarters. They will then use good judgement and proceed with utmost caution.

Studies have found, according to the Commissioner, that there is no advantage in having equipment stop at red lights. On the contrary, he said, the policy has resulted in "misunderstanding and confusion" for motorists who see a fire engine on one occasion stop for a light and on another going through a red light on the way to a fire.

Dade County Chiefs Organize

N. L. Wheeler, Chief of the Miami, Fla., Fire Department, was named president of the Dade County Chief Fire Officers Association at its organization meeting recently.

The organization is composed of fire officers from 22 communities in the County, the County Fire Department, Everglades Fire Control District and local military bases.

Other officers picked are G. A. Krouskroup, Jr., Miami Springs, and Peter Nilsen, Surfside, vice-presidents; Paul P. Sacher, Miami Beach, secretary, and Elmer L. Sullivan, Homestead, treasurer.

The organization will strive for improved fire protection. It is open to chiefs, and other fire department officers of high rank.

Sensational... NEW!

360° REVOLVING LIGHT

TRIPPE HI-BALL

Picture this stunning light on your emergency car—whether it be FIRE, POLICE, AMBULANCE OR WRECKER. Flip the switch and instantly the parabolic mirror begins to rotate around the 100 candle power bulb at 60 times a minute. The flash is so intense not only at great distances but close by that all traffic is immediately alerted.

Yes, here is the ultimate in a warning light! Beautiful and distinctive, 9½" in diameter, stands 11 inches above the roof. Easily demountable.

WRITE TODAY FOR INTERESTING CATALOG

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Janesville APPAREL CO.

JANESVILLE, WISCONSIN

Humor in Fire Service

(*Continued from page 848*)

nearest fire house. *They are good,* but not that good, because if everything clicked, no traffic delays, etc., they could not possibly have done it in less than two minutes. Of course, you know what happened. Some one phoned, the dispatcher had them on the way and about the time the box was pulled they were there. But try to make my friend believe it. Sure, its a good department, but you don't do a two-minute run through traffic in "seconds."

The Finger of Suspicion

Now I'll tell you one on myself. This occurred about two years before my appointment to the Board of Fire Commissioners. I was plain citizen Mendelssohn, but intimately known by the personnel of the department, and particularly by the Batt. Chiefs, Officers, and men of the companies in my first alarm district. They were "my friends," as you will discover. For years before becoming a Commissioner, I was one of those rare birds who had a tapper and register both at home and in my office. Therefore, I got the alarms the same as did the fire stations. There is a fire alarm box on the corner just below my residence and in plain view from the front windows of my home. The number is 595, easy to count and, when it is transmitted, my wife and I catch it quickly. Although in a residential neighborhood, the box is pulled three or four times a year, sometimes for fires and once in a while as a false alarm, for there are lots of teen-agers around. Well, on a certain summer afternoon around 4:00 o'clock, a Saturday when I was at home, in came old 595. Without giving it a thought this particular Saturday afternoon, I walked the short half of the block and easily got to the box before the first due company arrived. It's a three-pumper assignment: one ladder, a squad, and Batt. Chief. You've guessed it—a false alarm—mid-afternoon, bright sunshine, and no one but me at the box!!! The Batt. Chief and all the Commanding Officers, yes and many of the boys, saw me and *knew me,* but utterly ignored my presence. The top brass gathered about ten feet from me and began discussing the matter loud enough for me to hear, to wit: "It's a false alarm all right, and no one here but Mr. Mendelssohn. You don't suppose he did it, do you?" And after a few additional remarks they all broke into broad grins, came over and enjoyed the joke on me. Of course, never try to wiggle out of it or explain; one only gets in deeper, and to this day I don't know just what they really thought. Moral—don't be the only one at the box before the companies arrive if there is no apparent fire. Old 595 has been used quite often since then, but I discreetly remain out of sight at home until the companies arrive, unless I can actually see a fire, particularly since now I am a Commissioner. You'll admit that otherwise it is "bad coffee." One lives and learns!

Having told "one" on myself I might as well throw in another. This has taken place very recently, year 1955. I heard the other day a very apt description of a fellow like me, namely, I have been termed a "working commissioner" meaning one who attends multiple alarms, explosions of a serious nature even if only a first alarm, traffic accident if personnel is injured, etc. It is not unusual, for my three colleagues often follow suit. New York City had its Archer and now has its Edward Cavanagh; Boston had its Codman, and Detroit had its Hayward Murphy, just to mention a few, although there are many "working commissioners" around the country. Why do we do these things? Well, its probably because we are interested in our work, our men, and want to know what goes on. Commissioner Cavanagh of New York, recently at a news conference summed it up very aptly in words to this effect—one cannot find out what a fireman has to do sitting at a desk. He is so right and I agree thoroughly. But now comes the pinch. Here in Detroit a most unusual situation came along. While we do not have as many multiple alarms as the city of New York or a few others, we do average several each month. That is, we did until 1955. The unheard of has happened. We had a second alarm in February and then went practically five months, to be exact until July 2nd, without anything more than an "all hands" working fire. No, our Chiefs were not trying to be heroes and hang on to them; there just were no extensive or serious fires all that time. It has never happened before in the history of our paid department and that goes back a long time. That's where I come into the picture. After about three months of "nothing doing" it occurred to me that I had not operated either the red flasher or the siren on my personal car during all that time. Now this may sound silly—it is—but

When life depends on *split-second efficiency*

Fine points of design and construction may be a matter of pride or profit in some vehicles—but in a rescue car they can mean life or death.

In a Gerstenslager Rescue Car you determine the equipment needed to meet your safety department's probable emergencies. Gerstenslager designs the body to carry that equipment with maximum protection and accessibility.

Gerstenslager workmanship assures the all-important quality and precision. Fittings and fastenings hold delicate apparatus in position and release it instantly when needed. Compartment doors don't stick or warp. Bodies are built to stand rough travel at high speeds.

A Gerstenslager Rescue Car is the last word in modern life-saving efficiency when the chips are down.

The Gerstenslager Co., Wooster, Ohio
Established 1860

GERSTENSLAGER
Rescue Cars

every weekend at home in my garage I made a weekly test turning on the flasher and giving the siren a few short growls just to make sure they were still working. That's pretty bad when one gets to such an extreme!!! It's all over now tho, we had five multiples in July. The flasher and siren work all right too.

I could continue such incidents for some time but why try your patience, these yarns are all true and only go to prove that while operating a fire department is dead serious business there are nevertheless many things occurring that can be put over on the Sunny Side.

Water Fog Techniques

(*Continued from page* 853)

described in the foregoing is already being applied in a number of Dutch cities, and will shortly be introduced to Rotterdam. Six equipment trucks are to be added to the present equipment of the Rotterdam fire brigade. These trucks, which are described with justification as "mobile stores" of fire fighting and life-saving material, will also be equipped with a pump of special construction. Manufactured by Messrs. Kronenburg Bros., Fire Engine Works at Hedel, these pumps are designed to extinguish fires by means of fog. Practice courses to familiarize firemen with this modern fire fighting equipment are already in full swing.

Fire fighting by fog means an important step forward in fire fighting technique. The progress made in this field is of a revolutionary character and will inevitably bring about far-reaching changes in the organization of fire fighting services and their tactical strategy.

Henrietta Township Fire Protection

The Henrietta Township Fire Department, headquarters, Munith, Mich., provides fire protection to Henrietta Township, 36 square miles, population 3,500, and one half of Waterloo Township, 15 square miles, population 900. The Chief is Francis P. Rightmyer.

The Fire Station is centrally located in the Township and is manned 24 hours a day. The Chief is full-time paid, with quarters provided next to the Fire Station. Quarters are also provided for the Assistant Chief, who acts as relief, and his family. The organization numbers 16 call firemen, the pay being by hourly rate, starting when the alarm sounds and ending when all rigs are back in service. Three trainees are carried on a voluntary basis and will become call men when their required training period has been completed.

The department operates three vehicles: a high-pressure unit; a 800-gal. tanker, with 1,000 ft. of 2½-in. hose and two 1½-in. pre-connected lines of 200 ft. each; and a Jeep with 250 gal. tank and 200 ft. of reeled booster line. Both tanker and Jeep have front-mounted pumps of 500 and 325 G.P.M. capacity respectively.

The Department operates this way: For minor runs, the Chief and one man, summoned by telephone, respond. For major operations the Chief and high-pressure unit respond. The "hook is pulled" by Mrs. Rightmyer, the Chief's wife, who handles the dispatching. Owing to the wide area covered, and wind conditions, the alarm cannot be heard

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For Fittings Made to Their Specifications?

The reason is — knowhow. Our modern and complete facilities enable us to start from manufacturers' blueprints and develop special fittings all the way to the final brilliant finish. Manufacturers know, too, ATTWOOD quality is rigidly controlled, while ATTWOOD'S dependability has been proven countless times in actual service. Check with us on your special requirements.

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FOAM MAKER NOZZLES
attach to regular fire hose thread or most fog nozzles to create UNOX Wetter Water Foam as stream emerges from hose. Made of corrosion-proof aluminum, they are available for 1", 1½" and 2½" hose thread or nozzles.

IN-LINE PROPORTIONER
For use on trucks, in fixed systems or any fire-fighting line. Changeable 1% or 2% orifice in pick-up tube. Made of chrome-plated brass, in 3 sizes: 1" for booster lines, and 1½" and 2½" fire lines.

PORTABLE, PRESSURIZED FIRE WAGONS
For UNOX Wetter Water and UNOX Foam fire fighting. Available in 10, 20, 50 and 100 gal. capacities—hand-truck type mounting; three wheel mounting and trailer types. All models fully equipped with hose, nozzle, carbon dioxide cylinder, pressure regulator and relief valve. . . . UNDERWRITERS' LABORATORIES APPROVED.

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MODEL 20 SIRENLITE
for Emergency Vehicles

Siren sounds a penetrating warning, red light automatically flashes authority. Traffic opens instantly, day or night. FREE ROLLING feature.

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- **HANDSOME**
- **RUGGED**
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Built by proud craftsmen to the highest standards of precision manufacturing . . . utilizing materials of finest quality . . . Sterling Sirens give year-after-year of unsurpassed dependability and satisfaction.

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for Volunteer Systems

Quick acceleration, power-plus . . . Model M really gets the boys out in a hurry! Used by championship companies from coast to coast. A dependable, heavy-duty siren built of the finest materials throughout.

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Electrically operated by power from the truck battery . . .

50 and 65 foot lengths . . .

Built to meet the suggested specifications of N.B.F.U.

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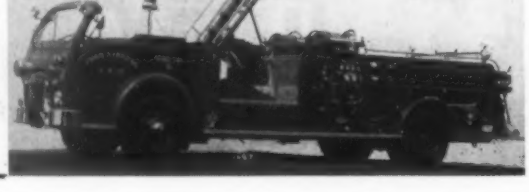
Apparatus shown above built by American-Marsh Pumps (Canada) Ltd., Stratford, Ontario, Canada, for Thetford Mines Fire Dept., using a 65' MEMCO AERIAL LADDER

Photograph on the right through the courtesy of American Fire Apparatus Co., Battle Creek, Michigan, who built this up-to-date Aerial truck for the Thad Stevens Volunteer Fire Dept., using a 50' MEMCO AERIAL LADDER



in some sections. Therefore four pre-designated neighbors each make phone calls to four pre-designated firemen's homes, stating when the alarm is sounding, thus alerting 16 men. They in turn call the dispatcher and she gives instructions for them to respond either to the fire, or to come in and get Engine 2 or 3, as the case may be. Usually when a run of 3 or 4 miles is made, firemen are waiting the arrival of the apparatus.

The Department carries on an extensive training and inspection program. Last year, 122 inspections were made in various types of buildings, such as schools, churches, grain mills, etc. Ten fire drills and fire prevention talks with appropriate motion pictures were given at four area schools.

In 1954, the Department responded to 50 calls, 23 of which were for dwelling fires; 10 for grass and woods fires; 5 to assist other departments; 1 "squirrel in flues," and 1 "false alarm." Total monetary loss amounted to $27,715.

Baltimore County

(*Continued from page* 843)

Gas Mask Training Building—Has two areas: one a work area and the other an observation room with air lock between. Training in wearing and use of different types of masks is conducted here under different operational problems that might confront a fireman.

Equipment Building—Used as an on-the-fire-ground office for instructors and for storage of all equipment used in training area, with suitable toilet and washroom facilities.

Drafting Pits—Two concrete pits in the training area for pump testing and driver instruction. One pit, approximately 10 ft. deep the other, about 19 ft. with two tops on different levels.

Water is released into pit through 8-in. main, valve-controlled. Water can be rapidly fed from upper into lower pit. Pressure and volume of water can be regulated as desired.

A piping system for reclaiming water from hose handling area will make it possible to catch rainwater, thereby reducing usage of water from public supply system. There are four hydrants in the training area.

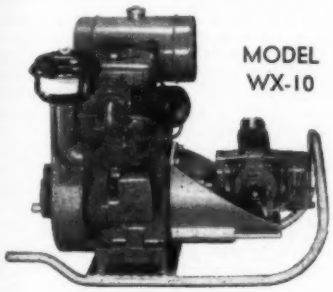
Hose Handling Area—A large concrete, fan-shaped slab is provided for training new and old firemen in handling of small and large hose streams of low and high pressures; provision for bolting down high pressure lines. A catcher-slab takes up the impact of heavy hose lines.

Upper Level—Concrete slabs and pits are provided in this area for teaching extinguishing techniques on small fires. A fuel storage tank is located here with piping to small pits and slabs whereby flammable liquids may be pumped under pressure. Pump mechanism enclosed in a separate, small building.

Driver Training—The training area is encircled by a roadway where much driver instruction is given. Buildings in the Training Area are so located that apparatus can be maneuvered between them to create various driving problems necessary in teaching drivers. Entire area is enclosed in a 12-ft. link fence for privacy. Also there is ample parking space for personnel.

PACIFIC PUMPERS
famous for power plus portability

Pacific Pumpers are well known for their practical design, dependable operation and high consistency of performance over long periods of service. The current outstanding line of Pacific Pumpers is the result of over 30 years of experience and development.



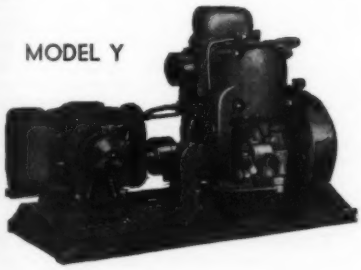
MODEL WX-10

Performance:

Pressure	50	100	150	200	225	250
G.P.M.	40	38	37	36	35	32

Length 30"—Width 21"—Height 22"
150 lbs. (with starter 170 lbs.)

Model WX-10 Pacific Pumper is an air cooled, general utility, Pumper designed for the toughest of service conditions. Built to operate at pressures up to 250 lbs. for modern fire fighting methods. Equipped with electric starter it is ideal for tanker use.



MODEL Y

Performance:

Pressure	100	125	150	175	200	225
G.P.M.	63	59	53	46	40	20

Length 24"—Width 12"—Height 15¼"
70 lbs.

Model Y Pacific Pumper is recognized as standard as the result of years of outstanding performance.

Write for catalog giving complete data on all sizes of pumpers, hose and accessories.

PACIFIC *Marine Supply Co.*
FIRE EQUIPMENT DIVISION
SEATTLE 1, WASHINGTON

Hurricane-Type Storm

(*Continued from page* 852)

tinguished. Damage, fortunately, was slight.

About the time that the fire in the chief's house was getting the treatment, the Fire Department Dispatcher called and reported that Lester Buchanan, ex-chief of the department, wanted a truck as his fire alarm bell was getting hot. Units were dispatched to his house, and also to the dwelling of the Assistant Chief, Roscoe Case, who likewise has an alarm bell. All these houses were within a five-block area.

Lewis Kadel, Fire Alarm maintenance man, said the alarm system was crossed with AC current which might be as high as 2300 volts. Later events indicated that the system did have 2300 volts shorted into it. The diaphone air horn remained in service for calling the firemen.

Thanks. ROBERT R. WHEELER

Overhaul and Salvage

(*Continued from page* 837)

ference of the International Association of Fire Chiefs) by claiming that two men off a truck could cover down a twelve or fourteen-room dwelling and protect every nickle's worth of property contained therein from getting damaged in any way whatsoever."

Chief Brosnan, who claimed he had done it again and again, had this to say: "It doesn't take big crews of men to properly salvage property. In a dwelling of twelve or fourteen rooms, where it is necessary maybe to use one or two hose streams, for you may be in a congested area of shingle roofs and high winds, and you have to keep the fire from spreading, the idea is to douse the flame as quickly as possible. It is necessary for you to cover down the furniture and cover it rapidly. It will surprise you how long a floor will hold water before it drops through on you."

Chief Brosnan was an advocate of the use of small lines. Perhaps with the way he handled a fire, it was possible for two men to effectively "cover" such a large dwelling.

Naturally, when one relates manpower to salvage operations and vice versa, it depends upon the kind of personnel, and what that personnel has to work with. No one can doubt but that the trained specialist in salvage operations is equal to a whole squad or more of untrained but willing workers. In fact, this author has encountered operations where a chief officer would clear out most of the fire fighting personnel filled with good intentions and ambitions, but getting in everybody's way, in order to give a few experienced salvagemen the elbow room to work in.

There is no question today but what in the average municipal fire department (which endeavors to perform salvage work) there is serious shortage of manpower—at least in the initial response of the fire forces. Those first-due and first-responding assignments to most working fires, have little or no time for salvage. It is all the men can do to stretch in, open up, make forcible entry, ladder the structure, and get water on the fire (not to speak of removing occupants, dead or alive, from the premises).

It is common knowledge that a large

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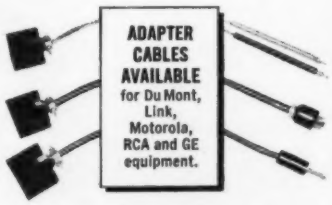

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Flat Head Fire Axe

In constant demand from municipal fire companies, transportation companies, forest services, hotels and institutions; the 6-pound head is perfectly balanced; Full polished, and finished in Indian Chief Red. 36-inch No. 1 hickory handle.

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Demanded for breaking and entering—FAST! Precision-balanced for safe handling in all 3 weights; 2¾, 4½ and 6-lbs.; white No. 1 hickory handle; popular for Chief's Car, Bus, Squad Car or Ambulance.

Mat Axe

Specially designed for forest fire fighting—36-inch White No. 1 hickory handle; ideally suited for brush, heavy timber and fire-lane cutting. 3¾-lb. head in black True American finish.

Undercutter

Designed for hidden fires, when floor boards or wall panels have to come off—FAST! Specially shaped for prying windows and doors quickly; 4½-lb. head; 36-inch No. 1 hickory handle.

MANN EDGE TOOL CO.,
Lewistown 9, Pa.

CHIEFS OF PLANT PROTECTION . . .

CHIEFS OF VOLUNTEER FIRE DEPTS. . . .

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The TOP PERFORMER of the Small Truck Class

THE BLITZ BUGGY FIRE FIGHTER

300 GPM High Pressure Pump

Write Today for Specifications

THE BLITZ BUGGY COMPANY Old Forge, N. Y.

percentage of the second and greater alarms sounded today are to secure manpower only. And here it would seem, is one solution to the problem. That is to consider *salvage* operations as well as fire *attack, rescue,* etc., in calling for reinforcements. For most large departments today have off-duty reserves and can bring them to the scene in an emergency far more quickly than ever before. There need exist no reason for not calling them in, when the situation warrants, and engaging them in salvage, rather than to permit them to stand fast at their apparatus, or in front of the fire building waiting for something to do.

In the volunteer departments the situation varies. Suburban departments (in areas adjacent to large cities) usually have more than enough men at certain hours of the day or night, many of whom could be put to work on salvage. At other times, it is true, the same departments may be badly shorthanded. Here again, if the fire is a serious one, and the available manpower is too limited to conduct any salvage work, the chief officer should avail himself of such mutual aid assistance as may be available.

If, as we have said, salvage is as important to any present day fire department as any other of its prescribed functions, then, manifestly, the necessary manpower, as well as mechanical facilities should be provided, or made available, to insure an efficient, satisfactory job being done.

Fire Station Building Program

(*Continued from page* 830)

should be well built, easily removable and kept neat. Built-in floor heating is coming into popularity, along with under-floor wiring (which is a "must" in modern fire alarm headquarters). Walls and wainscoting to conform to the architectural motif—no reason why modern tile and color should not be employed. It is not always possible or advisable to sound-condition the apparatus room, but it is advisable to incorporate any device that will muffle the exhaust of motors and carry away exhaust gases. Another excellent construction feature is plenty of openings into the apparatus room from other areas of the building, to save crew's steps and time in responding.

Kitchen—The army travels on its stomach and so does the fire department. Some of the kitchens being installed in streamlined fire stations would make even the little woman's mouth water. But why not the latest and best? That doesn't mean necessarily a separate freezer and refrigerator for each shift, but it should mean the latest in labor saving and culinary appliances. The kitchen should be a functional unit of every fire station. Its location, arrangement and equipment will be determined by the same factors which influence the installation of a kitchen in the home. There is a preference for light weight, modernistic metal seats, rather than benches, and the author has noted a tendency to incorporate "classroom" with the cooking features. Many a kitchen has a blackboard on one wall. Although some old timers may not like it, there's a tendency, also, to doll up this essential of the fire station and give it a homey atmosphere in fittings and furnishings.

Dormitory—has seen a great transition. The old dim, drafty, gloomy dormitory, with its bare floors, brass beds, straw mattresses, "horse blankets" and hard wooden chairs (when there were any—benches were usually the rule), and the odoriferous lockers, is rapidly becoming ancient history.

Modern heating, lighting, ventilating and air conditioning systems are the order of the day. Sound conditioning is an interesting newcomer, including not only in the structure but also involving the bells. In short, the modern fire station dormitory has all the comforts of home. Floor and wall coverings, venetian blinds, concealed "daylight" lighting and floor level illumination to facilitate getting into that night-hitch are favored.

In some dormitories, where lockers are located in sleeping quarters (we would throw the term "bunkroom" to the winds), the heating supply duct is furred in above the lockers, which have a small aperture at the bottom. Air is exhausted below, providing for heating and ventilating the lockers and dormitory simultaneously.

It is encouraging to note that individual lockers are being provided for personnel. Sliding poles (if the hazardous nuisances must be installed) are being located in recesses or closets with openings protected by directional automatic lighting and other safety features.

As time goes on, and working hours are changed, there will be proposals to do away with sleeping quarters in fire stations. Even if fire fighters do not regularly use such quarters, it is advisable to include them in the fire station as against the time of need, imposed by disaster.

Planners should not be pessimistic in laying out the dormitory space. Maybe there are only two or three men on duty right now, but that's no reason why a fire chief should expect that condition to persist indefinitely. So, provide ample room for eventualities, and those firemen you expect to add.

Recreation: If provision for recreation and athletic activities mean that Jack will not be a "dull boy," by all means provide them. Again we say, these help make the fire station the fire fighter's club as well as his business home and office and boost morale immeasurably.

It may not be possible to incorporate outside recreational and sport facilities in the fire station layout, but there is no reason why each station should not have a comfortably furnished lounging room with TV and radio. It isn't necessary to have plush carpets and super-stuffed furniture, but there can be easy chairs, card or game tables, perhaps a few shelves to form the nucleus of a good library (granted that budget and municipal management can't agree to a separate library in the structure).

Such recreation or lounging room and, if possible, inside handball court or small gymnasium, should be within easy distance of the apparatus floor and, naturally, equipped with signaling devices. In suburban areas, fire stations and grounds are taking on clublike characteristics, even to "clock golf" and puting greens! In some areas it's getting so you can't tell a fireman from a farmer, what with the gardening.

Where budgets and top level thinking permit, basements may house bowling alleys or pistol ranges, or both. These latter are found in increasing scale in

always specify

CIRCLE D®

LIGHTS

HERE are lights designed for rugged fire service. Completely weather-proof, shock resistant, compact — sealed beam lamps deliver light output greater than lamps many times their size.

Circle D 3 outlet connection boxes puts power where you need it—more light with less cord.

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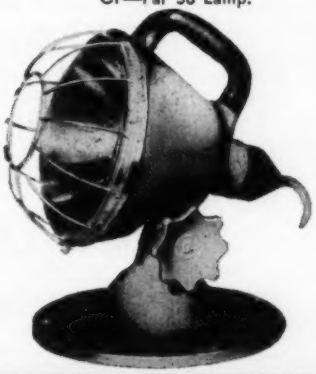
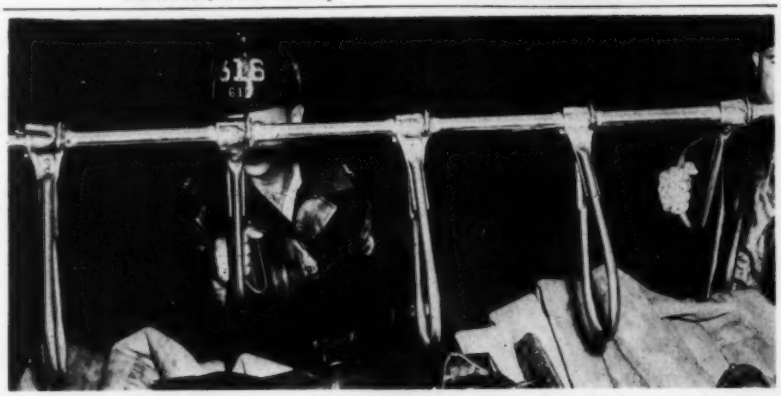
No. 150 High Intensity Flood R-40, 200-300 or 500 Watts.

No. 163 Narrow Beam Spot, 300 Watts—65,000 CP—Par 56 Lamp.





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WAUGH-ELLCON **HandHold**

Here is a life and limb saver for every fireman. A recoil spring keeps these HandHolds up out of the way when not in use. They are big enough to slip an arm through while putting on coat or hat. Stainless steel grips—built to last the life of the truck. Don't subject your men to falls—equip with WAUGH-ELLCON HandHolds — and SPECIFY them on all new apparatus.

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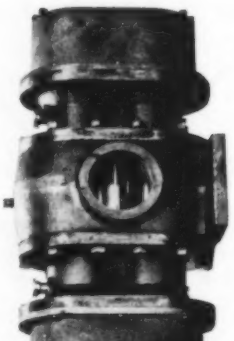
PROVEN TOUGH and STURDY

BUILT RUGGED

DEPENDABLE—

specify the

LEONARD
Rotary Gear
PUMP



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Easy to install . . . rugged and sturdy to the extreme! Leonard Rotary Gear Pumps are guaranteed. Deliver 150 GPM at 150 pounds.

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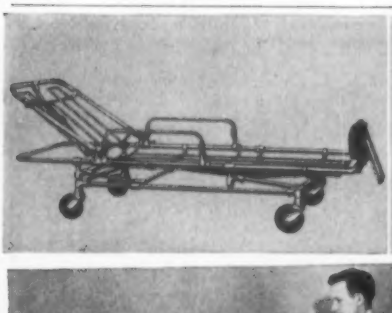

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31 years mfrs. of the finest

the volunteer departments.

A combination of recreation room and game room may be made by means of folding or removable partitions.

Basements Redeemed. Recreation; work shop and storage—Not all fire stations require and have basements, but if specifications call for one, it should be something more than a dungeon. Plan it with a view to utility and convenience.

In addition to housing the station heating, air conditioning, humidifying plants, air compressor (if any) and hot water systems, part of it, as just said, may be given over to certain recreation or sports. The dry basement also may be a point of storage (but emphasize that dry!) for fuel, depending upon the type of heating system; water and food (we repeat, frozen foods have found their way into the firefighter's life).

The basement may also house a modest laundry with clothes washer and dryer. And, last but not least, here's a good spot for a workshop which all hands can enjoy. The majority of firemen like to putter around with tools. Make it easy for them to do this.

Some fire stations have a repair-pit, with trap and elevator giving access to the underside of fire apparatus on the apparatus floor or upstairs workshop. This is particularly true where the fire station in question handles the department's minor repairs.

Here, also, there should be ample "daylight" lighting with remote control switches. If required, a sump-pump should be added. Here, also, hose driers may be installed, although it is preferable to have them on, or adjacent, to the apparatus floor. In some fire stations a simple chute is provided to facilitate handling hose between floors.

The "Business" Aspect - Offices need not be too "official"

Every fire station should have provision for the company and/or departmental officers. The business area should preferably be set apart from the watch or control room, on the ground floor level, integral or attached to the officers' sleeping quarters and toilet facilities. The architectural layout should, if possible, provide a desirable outside entrance to these quarters.

In bungadow or residential type stations, the office or offices may be furnished in simple "homelike" motif, with curtains, venetian blinds, stand lamps, rugs and pictures. Even the most businesslike offices can be made attractive and livable.

The officers' quarters may house the station library, but they should provide the necessary filing space for records, and the desk and other officers' accoutrements. Here, too, communication facilities are paramount.

Vamps Have Special Needs—and sometimes, funds. It should not be forgotten that the essentials of a fire station for a volunteer fire department may be somewhat different than those for a permanent paid department, as previously discussed. It is true that practically all of the consideration previously noted under site, location and surroundings, and under apparatus facilities, are just as pertinent to the volunteer fire station as to that of their professional brothers. However, considerations of living and recreational facilities must be designed to meet the different needs.

A point well taken by some chiefs is that living quarters, especially dormitories and related facilities, should be included in almost every station for paid drivers and, as they are termed in some areas, "bunk men." It is always helpful to have volunteer members of fire departments "sleeping in" and in times of extreme emergency it may be essential to bunk men at the station.

It is in the matter of meeting rooms that the volunteer fire station usually differs from that of the permanent force. In some volunteer departments several companies may occupy the same headquarter building. Each would of course like its own meeting room. At the same time, a meeting room capable of holding the entire department is advisable. It is easily possible to divide the large room into individual quarters by means of folding partitions which recess into the wall, when folded.

Many of the nation's volunteer fire houses would put the most elaborate municipal, professional fire stations to shame for beauty of design, architecture and interior furnishings. However, particularly in the small community and rural areas, where funds are not easily come by, the fire station may have to start off with only the barest essentials. This is no criticism of the vamps. But however the start, rest assured, few such firehouses remain that way. Especially since the vamps have their ladies' auxiliaries to help, inspire and bring about the improvements?

Air Horns Tried on Chief's Cars

Experimental use of an air horn on a battalion chief's car to clear traffic is reported by the Los Angeles County Fire Department.

The horn, of a new type recently developed, was installed on Battalion 1's sedan.

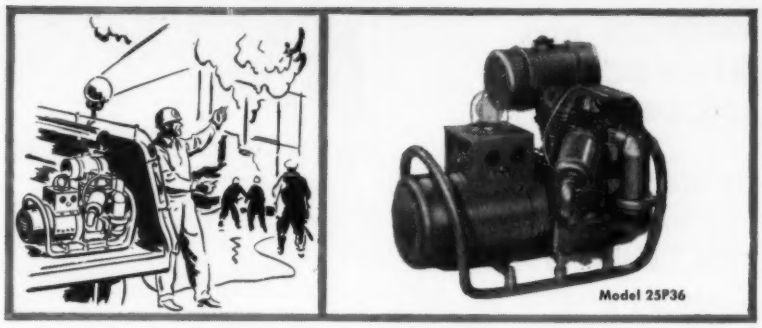
Chief William Weyant, B shift, and B. D. Robinson, A shift, report that the warning device is helping, so far.

All L. A. County fire apparatus presently is equipped with air horns.

CLIFF DEKTAR

L.A. County F.D. Photo by Landrum

LA. County Fire Department is experimenting with use of air horn on battalion chief's car to clear traffic. Here Battalion Chief B. D. Robinson, Battalion 1, points to horn while Chief Keith E. Klinger looks on.



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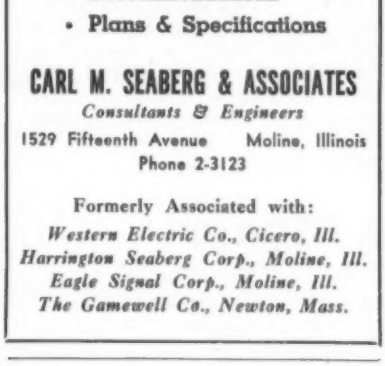

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For FIRE HOUSES & VEHICLES

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GREENWICH, CONN.

Short Cuts and Gadgets

"GADGET" IS GANGWAY TO SAFETY

An idea that developed into reality is a new type fire escape for homes, sanitariums, hospitals, industrial buildings and so on.

Arie Van Dort, 37, a postal clerk—not a fireman—who resides in Ridgefield, N. J., got the idea through association with his brother-in-law, William C. Karsten, an officer in the New York Fire Department who one day expressed concern over how Van Dort would escape from his second story sleeping quarters if a flash fire occurred.

Van Dort teamed up with Walter J. Vroman, 40, also of Ridgefield, a building contractor and no mean inventive genius himself, and the two pooled their ideas and efforts. They began the project about Christmas, 1953, working in their spare time in Van Dort's basement, and it was five months before the first experimental model was completed.

Several models and many months later, the final device was installed in Van Dort's bungalow. Meanwhile patent was applied for, and ultimately, granted.

The idea hinges—and it really hinges—around a simple, push-button (or to be literal, push-lever) device that, when not in use, tucks away into a wall of the house, but when the release is touched, swings into action and becomes an outside—one might almost say "balconied fire escape," complete with drop ladder.

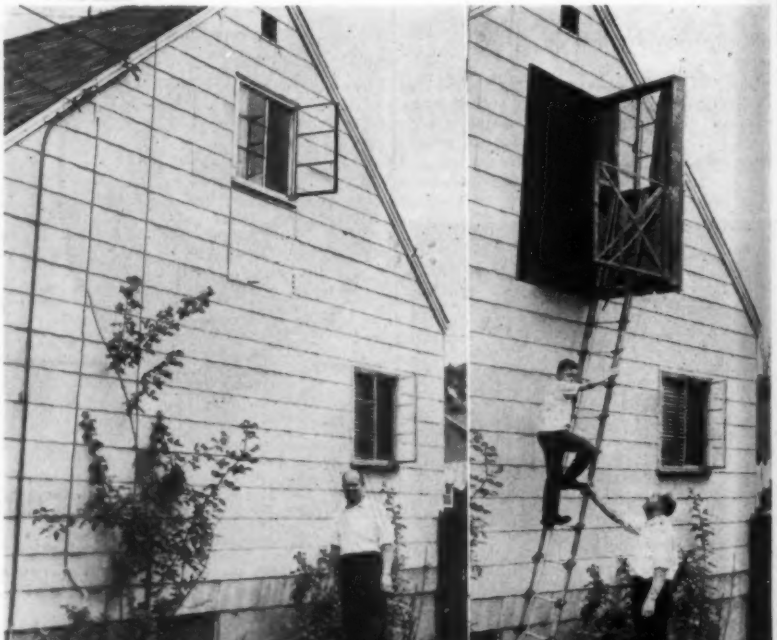
As shown in the illustration, the escape mechanism is housed unobtrusively somewhat like a folding wall ironing board, into the structural wall. It consists of a simple iron platform on which to stand; metal bracing and handrails; and a telescoping and folding ladder—likewise all metal.

The fire escape operates by gravity and spring action and can be applied to any structure up to 25 feet above ground. The invention may have a window as part of its construction or may be paneled to resemble adjacent wall panels, thus being invisible from both the interior and exterior, except for an inconspicuous bracket on the outside, and lever or catch on the inside.

There is no glass to break or any physical effort required to swing out and lower the escape in an emergency; If by chance someone lifts the starting lever, an alarm sounds to notify occupants of the house and also the neighbors, that there is an emergency.

The escape can also be operated by a second lever installed on the ground floor. Should a fire occur on the second floor and persons there be unable to operate the fire escape from that point, lifting of the first floor lever would place the device in motion, thus permitting those on the floor above to make their way to safety down the ladder. Operation of the first floor lever also permits firemen to gain access to the floor above, from outside the building, to make rescue or for fighting the fire.

The ladder is of steel, capable of hold-



Novel fire escape developed by laymen. Left: Fire escape "door," in closed position. Right: Fire escape set in position to use.

ing 700 pounds, and is weighted at the end to prevent shifting position under weight of anyone on it.

The "co-gadgeteers" reportedly have been in touch with persons and concerns interested in building and selling the finished product. Meanwhile, Brother Van Dort and his family are sleeping easy at 372 Shaler Blvd., Ridgefield. It took the combination some 18 months of toil and sweat, not to speak of $2,000 of their savings, to produce the product pictured herein. But they sort of believe it's worth it.

* * *

PRE-FIRE KNOWLEDGE—READY WHEN IT'S NEEDED

Our readers must know how often we have urged fire departments to pre-plan fire control and extinguishment; to have pre-fire knowledge of conditions of building and occupancy.

It isn't always as easy to show just how this pre-planning should be done and how the information collected for such pre-fire suppression strategy should be used to best advantage, as it is to recommend doing it.

In this connection, we quote from a paper delivered by the former fire chief of Fargo, N. D., Fred J. Wells, before the Twenty-Sixth Annual Fire Department Instructors Conference in Memphis, February, 1954. The paper was later reproduced and distributed by the International Association of Fire Chiefs to its members.

In his message, Chief Wells told how his department gathered information on practically every business and industrial building and other fire hazard, and, more to the point, how these data were used to advantage by the fire department. Emphasis was placed on basements and cellars.

The information itself was somewhat like that contained in Sanford maps, only the Fargo Fire Department made its own drawings of the basements of the business places in the high value district. These drawings are kept in five books. The books are all indexed for ready reference. One book is kept at fire alarm headquarters so that any company or commanding officer can obtain the desired information by making use of the department's two-way radio. Other copies are kept at fire stations, and at the training department for study by the personnel.

A feature of the Fargo plan is an index card, containing bits of basic information about the above mentioned occupancies. Immediately upon the response of apparatus, the fire alarm operator pulls from the index file the card made out for the address of the fire. He then dispatches (broadcasts) this information to all responding units via the two-way radio with which all rigs in the department are equipped.

Obviously, even before he may get to work, a fire officer responding to an alarm for fire or other emergency in such occupancy will be better armed and prepared for eventualities, than he could ever hope to be merely from reports of inspections of the occupancy, which are filed away by the department, and which may never get to the responding forces at all, or until too late to be helpful.

Here is another use of fire department radio, coupled with pre-fire inspection and pre-fire planning which, according to Chief Wells, has paid big dividends.

Oil Reservoir — Filled through pipe plug in bonnet — assures positive lubrication of stem threads.

Dry Top Design — Prevents freezing of stem threads.

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"O" Ring Seals — Make permanent water-tight seal around stem.

AWWA Improved FIRE HYDRANT

Breech Locked Nozzles — Interlocking lugs prevent blowout.

Safety Stem Coupling and Safety Flange — Coupling and flange break on impact, preventing damage to stem and barrel. Permits convenient facing of nozzles. Extension sections may be added or upper barrel may be changed from two-way to three-way hydrant without digging or water shut-off.

Compression-type Main Valve — Closes with water pressure.

Double Drain Valves — Integral part of main valve assembly.

Double Drain Openings — Force flushed each time hydrant is operated.

Bronze Seat Ring — Straight threads for easy removal.

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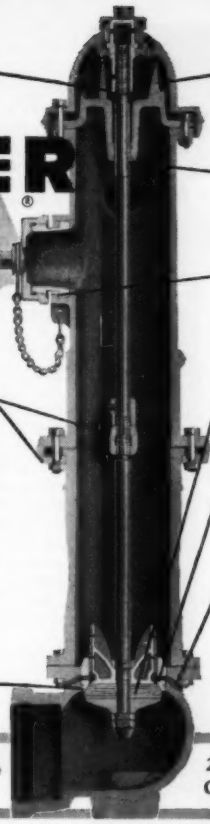

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NEW—Model 130R1500—lightest weight, lowest price and maximum performance are combined in this new compressor. Write for details.

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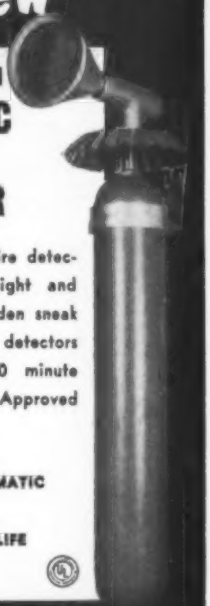
FALCON AUTOMATIC FIRE DETECTOR



Here is fool proof fire detection that guards night and day against the hidden sneak attack of fire. These detectors "scream out" a 10 minute 95 decibel warning. Approved for 20 ft. spacing.

- COMPLETELY AUTOMATIC
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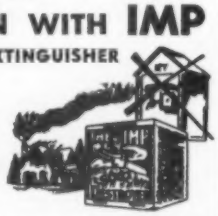

Save rushing to chimney fires—avoid slippery roofs by using IMP Chimney Fire Extinguisher. Just throw a 65c package "as is" on the hottest part of the fire in the stove, furnace or fireplace. The chimney fire will be out in jigtime without water or chemical damage. Recommended by many chiefs who carry IMP in their cars. ALSO—LIQUID IMP for *oil fired units*, is as much a fire preventative as pkg. IMP. Saves oil, money, increases heat, prevents sludge, reduces carbon deposits and is safe. You know what a fire hazard sludge is. Use LIQUID IMP in your own burners. 3½ oz. enough for 90 gals. kerosene or 55 gals. No. 2 fuel oil; 16 oz. enough for 3 times above quantity; 1 gal. enough for 1600 gals. #2 fuel.

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I will honor your bill f.o.b. Bridgeport.

NAME.....

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FIRE EQUIPMENT DISTRIBUTORS ATTENTION!
Add package and Liquid IMP to your line.
Write TODAY for special distributor Plan.

Driver Training

(*Continued from page* 825)

ministrators (State Driver License Officials). This means being able to read at 20 feet the letters on a test chart which you should be able to read at 40 feet. Whether the candidate's sight (visual acuity) is tested by use of the Snellen Charts or other means, it should also include a test for color vision. It is estimated that about one person in twenty has some difficulty in distinguishing certain colors. It is also estimated that defective color vision is about five times as frequent among men as among women. Today, the Ishihara test for color vision is being replaced by the Allgaier Colorater, which requires the same kind of color discrimination that the driver must show in reading traffic signal lights. A small motor within a rectangularly shaped box turns a disc containing sections of glass of the same colors as are found in traffic signals. A light illuminates each section as it becomes visible through a small opening. The colors appear in random order, each exposed for about two seconds. Candidates are required to name them properly as they appear. In this connection three other devices, similar in their area coverage, were satisfactorily explored. They were:

1. The "Ortho-Rater", made by Bausch and Lomb Optical Co., Rochester, N. Y.
2. The "Keystone Telebinocular," made by Keystone View Co., Meadville, Pa.
3. The "Sight Screener", made by American Optical Co., N. Y.

All measure such vision aspects of driving as acuity, phoria, depth perception, steriopsis and color recognition. Each of them may be properly administered by a layman, after suitable instruction.

At this point, it might be well to mention these salient facts: (A) In forty-five states you must pass a test for visual acuity before you can receive a driver's license. (B) Although night vision has been proved a very important factor in highway accidents, only five states test for it. (C) No state tests for the important subject of glare resistance. (D) In nine states, you must pass a test for depth perception. (E) Eleven states test for adequate visual fields.

Concluding this topic, extreme nervousness or tension, excitability, unfavorable cardiac conditions, blood pressure considerably above or below the average or doubtful general health should be grounds for failure by the physician. The driver himself should keep in mind the fact that seemingly minor disabilities of a temporary nature may definitely affect his driving skill. Such things as an ordinary cold, stomach ache, headache, indigestion, sun burn, stiff muscles, sore throat or hay fever may in an acute emergency spell the difference between a narrow escape and a bad accident. He cannot be expected to relinquish the wheel because of one of these, but he should compensate by extreme caution and attentiveness while driving.

Traffic and Driving Knowledge Test.

It is surprising how incomplete is the knowledge which the ordinary driver possesses concerning specific traffic regulations in force in his own particular locale and how misinformed many of us are on recommended driving procedures. A printed test embodying questions de-

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Gives Complete Immobilization of Injured or Fractured Members

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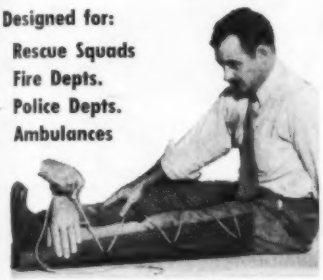

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A Simple Powerful
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GIVES BRAKES WHETHER OR NOT THE MOTOR IS RUNNING — AND IN MOST CASES IF BOOSTER OR MASTER CYLINDER FAILS. GIVES BETTER CONTROL OF EVERY STOPPING, HOLDING, AND STARTING OPERATION—WHETHER THE TERRAIN IS ROUGH OR HILLY—OR THE LOAD LIGHT OR HEAVY.

DO MORE WORK — IN LESS TIME
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signed to bring out any erroneous impressions or misinformation should be given during the period of initial selection. The test should encompass such topics as what to do in a skid, correct driving practices, causes of accidents, right of way, proper hand signals, speed factors and related data. The test serves as an excellent aid in introducing the topics when covered under classroom instruction wherein the material is further explained and misimpressions corrected. Three recommended tests covering this phase are:

1. "Knowledge Test for Automobile Drivers", Center for Safety Education, New York University.
2. "How to Drive," compiled by the American Automobile Association Washington, D. C.
3. "Driver Information Test No. 1", developed by the U.S. Army.

These tests can and have been used as templates to formulate additional questions on material particularized to the department's operations. It is generally agreed that such tests are not designed primarily to eliminate a candidate from further training. Rather their purpose is to convince him of his shortcomings in this area and, as already explained, to serve as a teaching technique in further exploration of this field.

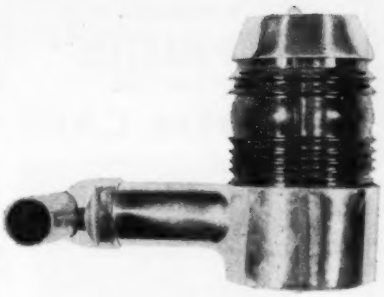
Driving Records.

Past driving records of new candidates, procurable from police blotters, traffic courts and by questionnaire, should merit close attention as, contrary to common opinion, "History does repeat itself." It is a known fact that some drivers are much more likely than others to have accidents. We call such drivers "accident-prone." Studies made by the U. S. Public Roads Administration as well as by a group of commercial concerns operating large fleets of motor vehicles have validated this opinion that some drivers tend to be accident repeaters. In other recent study of many thousand of drivers, some four per cent were found to be responsible for thirty-six per cent of the total number of accidents. An individual with an outside record of repeated traffic violations and accidents is not likely to improve while driving a fire apparatus, with the benefit of a siren and no speed limit to control him.

If a driver is convicted for the following serious types of offsenses, the laws of some states now make it mandatory that his license be revoked:

1. Manslaughter by automobile.
2. Driving while under the influence of an intoxicant or drug.
3. Operating a motor vehicle in the commission of a major crime.
4. Failure to stop and render aid when involved in an accident resulting in personal injury or death of another.
5. Making false statements under oath involving any law relating to the ownership or operation of motor vehicles.
6. Three convictions for reckless driving within a period of 12 months.

Ironically enough, according to the laws of many states, a fire apparatus is not classified as a motor vehicle and the driver, therefore, requires no driving license. Neither does the vehicle carry state license tags. Under these conditions we could very well have a situation where a man, deprived of his right to drive a motor vehicle because of one of the above offenses, still retains the



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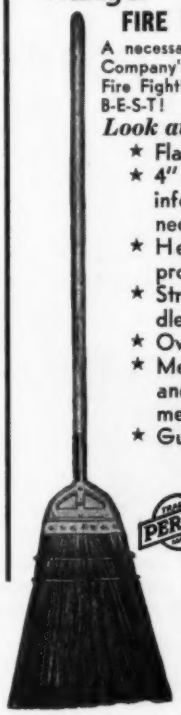

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right, legal and otherwise, to drive a piece of fire equipment on the road.

Many large commercial fleet owners, interested in lower insurance premiums, employ the following procedure in dealing with their repeaters.

1. The Personal Interview: A detailed report of the series of accidents is made by the repeater. Next, careful analysis is undertaken to determine the causes and the repeater's part in their occurrence. Specific advice is then given as to means of avoiding recurrence.

2. Individualized Instruction: The driver trainer or safety inspector carefully observes the repeater while he is operating his vehicle, makes an on-the-spot analysis and provides necessary corrective instruction.

3. The Retraining School: This program includes thorough re-examination (medical and psycho-physical) of the repeater; lectures and discussions followed by safety films showing correct and incorrect methods of driving; actual demonstrations of safe operating practices; specialized retraining to correct faulty driving habits and improper attitudes.

Attitude Tests

The majority of motor vehicle accidents are caused by drivers who have something wrong with their ideas or attitudes. This is shown by the fact that the main causes of all accidents include violations of traffic rules, disregard of sound driving practices, excessive speeding, passing at the wrong time, violating the right-of-way, and driving on the worng side of the street or road. A majority of these dangerous drivers may be classified as egotists, show-offs and temperamental individuals. None of them should be permitted to sit at the wheel of a fire apparatus. While some traffic-safety engineers express doubt as to the necessity of including a specific attitude test in a fire department program, because of the many imponderable and psychological factors involved, there seems to be little doubt as to their value when correctly used. As stated by Dr. Herbert Stack, Director of the N.Y.U. Center for Safety Education, "Good attitudes are basic to good driving, even more important than skills and knowledge. These attitudes show themselves in specific acts and practices." Another authority reports: "Recent research has tended to show that knowledge and driving skills, although important, are not enough to guarantee safe driving. The primary cause of accidents . . . are faulty attitudes and poor judgment."

Attitudes may be looked upon as emotionally influenced tendencies of an individual to behave in a certain way. They result from the concepts and skills an individual acquires and have important implications for instruction in driver education courses, both on a beginner and advanced basis. New information and skills result in an increased appreciation by an individual of his relationship to various factors in the environment. This appreciation, in turn, results in a tendency towards new modes of behavior. For example, as a result of his understanding of "Kinetic Energy and Braking Force" (covered elsewhere in this article) he appreciates the relationship of speed to the possibility of an accident as well as to the severity of any such mishap. As a result of this process, the candidate tends to drive at rea-

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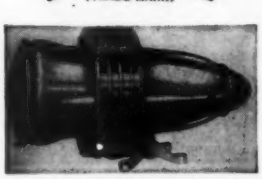

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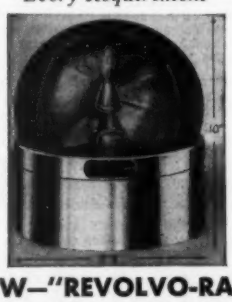

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sonable and prudent speeds.

Two tests reviewed and approved for determining an applicant's attitude are:

1. "Siebrecht Attitude Scale," developed by Dr. Elmer Siebrecht, N.Y.U. Center for Safety Education.
2. "Driving Attitude Inventory," by Donald . Conover, Iowa State College.

In summary, incorrect attitudes as determined by such tests or by questions particularized to fire department operations may be corrected through the medium of classroom or other instruction.

Psychophysical Tests.

Over the past twenty years, a variety of devices has been developed for selecting and training drivers, and today they play an important part in complete driver education. The Armed Forces use them in driver selection and training; commercial firms use them in selection of applicants for positions as drivers; recognized driver training specialists incorporate them in their courses, and at the present time there is a movement under way to have applicants for state licenses to drive be subjected to them. The State of New Jersey, for example, makes copious use of them in its Accident Control Clinic, wherein attendance is compulsory for those drivers who have been convicted of three serious traffic violations.

These testing devices, however, must be administered carefully and under standardized conditions for meaningful results. If tests are properly given they serve several important uses:

a) They impress very vividly upon the driving candidate the many personal characteristics in driving so that he will appreciate the importance of the job.

b) Made to realize that many other drivers are likely to have various deficiencies, for which allowances must be made, he is encouraged to drive "defensively" or to drive in a manner that compensates for the faults of others.

c) Many of the deficiencies unearthed by the tests are unknown to the driver and henceforth he can either correct them or make allowances for them. In addition, certain tests point out where additional training is needed. In this connection research has proved that accidents can be reduced by better than 50% where a driver has been made aware of his limitations and has been taught corrective compensation.

It must be remembered, however, that even though a man has a good or perfect score on these tests, he is not to assume expertness as a driver. Proper driver training and experience, plus correct driving habits and attitudes, are also essential to safe driving.

Instrucitons for the construction of most of these psychophysical testing machines are given in the Army publication "Driver Selection and Training"; the A.A.A. booklet, "Plans for Building Driver Tests," and "Driver Testing Devices, Their Construction and Use", published by the Association of Casualty and Surety Companies.

The following devices should be constructed or purchased by the larger departments which will have continuing driving programs, or they may be had on a loan basis from one of the institutes giving fleet training:

1. **Field of Vision (Peripheral).** Most people can see more than 90 degrees to each side, i.e., "out of the corner of the eye," making a total field of vision of

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180 degrees while looking straight ahead. Good side vision is particularly important in approaching or driving through intersections as well as in passing other vehicles or being passed. This device discovers people who are afflicted with so called "Tunnel Vision" or a narrow visual field. This shortcoming is correctible neither by glasses nor surgery, but since it is largely habit, it may be corrected by training. If this handicap is brought to the attention of a man, he can make allowances for it by:

1. Proceeding at a slower rate when approaching places where other vehicles or pedestrians might be approaching from the side.

2. Forming the habit of turning his head slightly both ways when nearing intersections or other dangerous points.

The American Optometric Association recommends that your eyes should have the capacity to span a 140 degree arc while looking straight ahead.

2. Depth Perception. This device measures in a limited way a person's ability to make a judgment of space, distance and relative positions of objects. It is important because he must use that judgment in making turns in traffic, in parking in limited spaces, in overtaking and passing other vehicles, and avoiding the mistake of cutting in too sharply or following too closely.

The usual device for measuring this faculty has the candidate line up miniature cars until they appear to be side by side by looking into a mirror; or by lining up two pegs at a stated distance by pulling strings and without the aid of a mirror. This latter device, in which the margin of error should be less than one inch, is called the Howard-Dolman Peg Test (Army Rod Test). A person with below-average ability in judging distances should not follow other cars too closely and, before attempting to pass, he should wait until there is more clear space than appears to be ample.

3. Glare Acuity. Some measure of the ability to see with little light is important, as people who can see well during the day cannot always see equally well at night. In addition, meeting glaring headlights on the road can add immeasurably to the problem of night driving. Even after the headlights pass, some time is required for vision to come back to normal. Highway safety engineers have coined the phrase and wisely prescribed the axiom that *"Speed should always go down with the sun."*

Strictly on a mileage basis, the fatal accident rate is three times as high at night as it is during the day. Undoubtedly, one of the most important night-accident factors is the driver's inability to see enough. Another factor contributing to this is that some drivers experience "blind spots" (night blindness) immediately after meeting bright headlights at night. The bright lights cause the pupils of the eyes to contract and after passing the bright lights, the driver's eyes do not immediately become readjusted to the darkness. Many professional drivers have learned to solve the problem of oncoming headlights by not looking directly into them, but keeping the eyes towards the right hand edge of the pavement and using that edge as a guide line.

Both glare acuity and night vision are tested by having the candidate look through two apertures in a long box. Controls on the side determine his abil-

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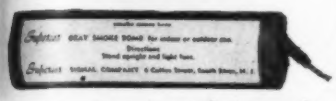

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ity to see with limited illumination, see in the face of glare and how well he can see details. Night vision alone is sometimes tested by keeping a man in a dark room for a half hour and then have him look into one end of a dark box containing radium buttons which he moves towards him until he can tell which way a series of mounted stripes run.

4. Eye Dominance. If one eye is doing more than its share in the seeing job, the other eye is less likely to notice objects coming from that side. In this test the subject lines up a movable aperture with a vertical line, bringing the aperture alternately from the right and left sides.

5. Reaction Time. The interval which elapses between a driver's sight of the need for stopping and moving his foot from the gas to the brake pedal is known as the reaction time, or more exactly for our needs, the braking reaction time. There are two types of devices in present usage for measuring a driver's reaction time. The first, or *simple reaction time* machine, consists of a simulated vehicle floorboard with clutch, brake and accelerator pedals. Red and green mounted lights provide the signal for the driver to move his foot from the gas pedal to the brake pedal as quickly as he is able. This elapsed time is measured by a clock in hundredths of a second. In this situation the driver is all set to react, knows what signal to expect, and has no choice as to what reaction he will make. The average person's reaction time as measured by the electric clock under this set-up is about .40 of a second. The second device, called the *complex reaction time* machine, has in addition to the aforementioned controls, a right-turn arrow, left-turn arrow, red light and a steering wheel, the signal for each of which goes on at random intervals, requiring the driver to make the proper response. On this particular test the average complex reaction time is about .60 of a second.

However, under actual driving conditions, the situation is much more complicated and the driver is constantly required to make unexpected choices. Most authorities agree that under actual driving conditions the average reaction time is likely to be about ¾ of a second. Roughly speaking, with this average reaction time, even under ideal conditions of road and weather, a vehicle will travel a distance in feet equal to the speed at which it is traveling, *before it starts to slow down.*

We have mentioned a figure for the average reaction time, which itself is variable in all of us. Laboratory tests have proved that, along with other factors, reaction time is increased by changes in our physical condition such as fatigue, age, alcohol, eyestrain, sedative drugs and distractions, such as daydreaming, worry, sorrow, business or social planning, conversations or radio. Other studies have shown that beyond the age of 28 our reactions start to slow down, however slightly. Beyond the age of 55 this slow-down is very sharp.

One cannot, however, rely on his reaction time, not exceeding his average in any particular instance, as might happen if his attention were momentarily distracted or his foot should slip off the brake pedal. Besides slower reaction time, with advancing years may come failing eyesight, hearing, high blood pressure and frequent lapses of attention. In addition, glare resistance and

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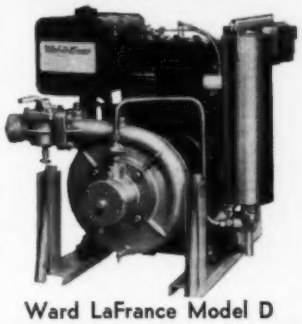

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glare recovery may grow increasingly difficult. It must be noted, however, that there is no set age at which these shortcomings begin to set in. With one man it may show at 50 years of age, while another may reach 65. This fact only emphasizes more than ever the wisdom of periodical physical examinations, in addition to reaction time and other psychophysical tests. This step would benefit not only the chauffeur but also those riding with him. Many men who have "slowed down" sufficiently to make them poor risks as drivers still make excellent firemen.

Other psychophysical devices which are less frequently used in driver training programs include devices for testing strength and steadiness as well as an audiometer and jerk recorder.

Because of the time element, it seems to be more practical to use individual machines for each of the above tests in situations where there is a large group of candidates. If, however, the group is a small one such as we would have when giving the "refresher" course to an individual company, it would probably be wiser to use one of the portable and compact units which combine a representative group of these tests in one machine. Among others, the following were investigated:

1. The "Evaluator", American Automobile Association, Washington, D. C.
2. The "Porto-Clinic", Porto-Clinic Instruments Co., New York, N. Y.
3. The "Driverlab", Educational Device Co., Suffern, N. Y.

(To be continued)

News of the Manufacturers

(Continued from page 897)

Fire Apparatus Manufacturers Meet

Lester W. Young was elected president of the Fire Apparatus Manufacturers Association at the recent meeting held at Mackinac Island.

Richard E. Vernor, Manager of the Fire Prevention Department of the Western Actuarial Bureau, spoke at a luncheon on July 21, 1955, and Warren Y. Kimball of the National Fire Protection Association, was luncheon speaker on July 22, 1955.

Among those present were Mr. and Mrs. Charles Trautwein and daughter, Trautweins' Inc., Woodbridge, New Jersey; Mr. and Mrs. Richard Swift, Trautwein's, Woodbridge New Jersey; Mr. and Mrs. Richard Sargent, Hale Fire

Lester W. Young

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Officers were elected as follows:

President, Lester W. Young, Young Fire Equipment Corp., Buffalo, New York; Vice President, Richard S. Howe, Howe Fire Apparatus Company, Anderson, Indiana; Secretary-Treasurer, E. L. Koepenick, Fire Apparatus Manufacturers Association, Inc., Washington, D. C. Directors: 1 Year: P. E. Van Pelt, P. E. Van Pelt, Inc., Oakdale, California.; Fred Waterous, Waterous Company, St. Paul, Minnesota; Francis Brigham, Oren Roanoke Corporation, Roanoke, Virginia; Directors: 2 Years: Richard Sargent, Hale Fire Pump Company, Conshohocken, Pennsylvania; Joseph Whitcomb, Maxim Motor Company, Middleboro, Massachusetts; L. A. Nelson, The General Fire Truck Corporation, Detroit, Michigan; Directors: 3 Years: Howard Spain, Seagrave Corporation, Columbus Ohio; Joseph Grossman, Ward La France Truck Corporation, Elmira, New York; Cy Welch, The Four Wheel Drive Auto Company, Clintonville, Wisconsin.

The Association is having its next meeting at Columbus, Ohio, in January of 1956. The Seagrave Corporation will act as host at this meeting.

Aluminum Ladder Catalog

The Aluminum Ladder Company, Worthington, Pa., has announced a new aluminum fire ladder catalog No. 6F. The catalog shows a complete line of aluminum fire fighting ladders as well as construction details of each ladder. A general description and specification table is also shown for each ladder.

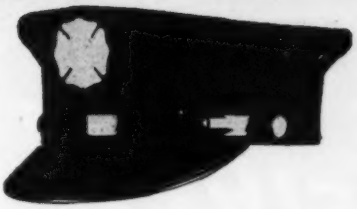
Arson Suspected in Elementary School Fire

An early morning fire caused $20,000 damage to the administration building of the new Roosevelt-San Gabriel Elementary School under construction in San Gabriel, Calif.

Arson investigators were examining the debris to determine whether arson was involved. The structure was about 50 per cent finished and was expected to be ready for occupancy by September.

The blaze broke out in the one-story frame and stucco structure shortly after midnight and four Los Angeles County Fire companies under command of Battalion Chief Robert H. Parsons fought the fire. Quick work by the firemen prevented the flames from spreading to other school buildings.

PAUL DITZEL



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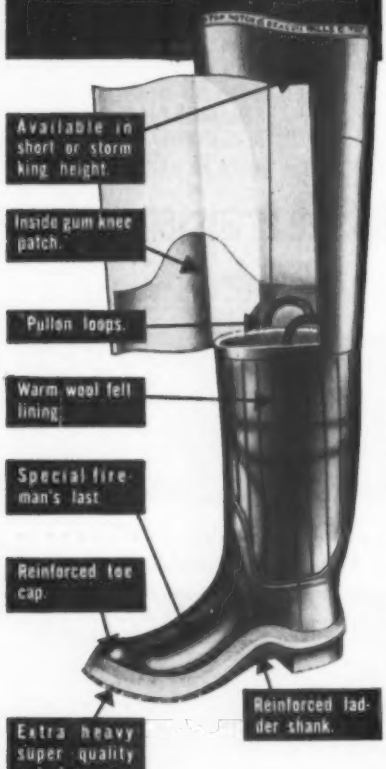

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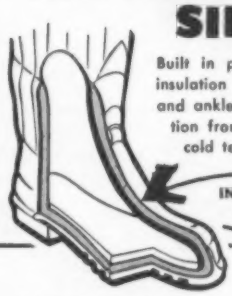

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